335-EMD-001

ECS Maintenance and Development Project

EMD COTS Deployment Plan (12/03 through 12/04)

Revision 01

February 2004

Raytheon Company
Upper Marlboro, Maryland

EMD COTS Deployment Plan Rev. 01
(12/03 through 12/04)

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Preface

This document is a formal contract deliverable. It requires Government review and approval within 20 business days. Changes to this document will be made by document change notice (DCN) or by complete revision.

Revision 01 of document 335-EMD-001 contains the following changes:

1. Two NCRs have been added to the Remedy 5.1.2 Upgrade section 4.3.
2. Updates have been made to the IRIX 6.5 Upgrade section 4.16, primarily identifying IRIX 6.5.22 as the upgrade version.
3. Revision of section 3.6.5 on current status of IMSL Numeric Libraries.

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Abstract

This document provides the first in a series of EMD project documents that provide information and details associated with the upgrading of COTS. This document provides information regarding COTS products and freeware that are being upgraded, added or removed, the rationale for the upgrade, schedule for upgrade, and the process used to report weekly status. The document also provides information about the reviews and risk mitigation activities performed throughout the upgrade cycle.

Keywords: EMD, upgrade, status, hardware, software, COTS, Solaris, IRIX, Sun, SGI

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1. Introduction

1.1 Identification

This document is the original issue of COTS Deployment Plan (12/03 through 12/04), as defined by CDRL Item #023, EMD-EDP-23. This document identifies COTS hardware and software products being upgraded from December 2003 through December 2004 for the EMD Project. This CDRL document for EMD will be updated on a yearly basis. Interim updates may be provided if identified in new EMD Tasks.

1.2 Scope

The "EMD COTS Deployment Plan (12/03 through 12/04)" documents the ECS approach and currently identified plans for deploying COTS hardware and software upgrades to all EMD sites. This document includes upgrades that will occur, or are in progress during the period December 2003 through December 2004. Some COTS upgrades are also included in this document that have been completed since the delivery of the last ECS COTS Deployment document (DID 335, COTS Deployment Plan, Volume 8). Interim updates to this document will also be delivered if updates to this document are specified in future EMD tasks during this period.

1.3 Purpose

The purpose of this plan is to identify the COTS products planned for upgrade during the coverage period. This plan describes the process used for determining which products to upgrade and it discusses key consideration for each selected upgrade.

1.4 Status and Schedule

This document will be formally delivered in December 2003. Status on the COTS software upgrades identified in this document will be reported on a weekly basis through the COTS Upgrade Team (CUT) Matrix (refer to Appendix A for recent CUT Matrix) and hardware migration weekly updates/discussions with appropriate DAAC personnel. Updates to COTS Hardware and Software will also be provided as part of the Deployment Monthly Patch Plans.

It is essential to understand that as the identification of requirements and risks progresses, some elements of this document may change, e.g., additional products may be identified for upgrade during the period specified herein.

1.5 Organization

Section 1 provides information regarding the identification, scope, purpose, objectives and organization of this document.

Section 2 provides a listing of the related documents, which may be used to supplement and provide additional cross-reference information other than that which is contained in this document.

Section 3 provides an overview and introduction of the requirements driving COTS upgrades, such as custom code integration, vendor support policies or COTS product interdependencies. This section provides a summary table of all identified COTS upgrades for the targeted document period. The identified COTS products are discussed in more detail in sections 4, 5, 6 and 7.

Section 4 identifies and discusses the COTS software upgrades that are planned to take place during the targeted document coverage period.

Section 5 provides a brief discussion of software upgrades that may occur during the period targeted by this COTS Deployment Plan depending on available resources, available software releases and/or possible new EMD tasks.

Section 6 identifies and discusses the COTS hardware upgrades that are planned to take place in the covered period of this COTS Deployment Plan.

Section 7 provides a brief discussion of possible hardware upgrades. Generally these are activities that require new EMD tasks to be defined and approved. Some of these activities are currently being discussed with ESDIS.

2. Related Documents

2.1 Parent Documents

The following are the documents from which the ECS COTS Deployment Plan scope and content are derived.

334-CD-600	6A Science System Release Plan for ECS
334-CD-610	6B Science System Release Plan for ECS
335-CD-001	ECS COTS Deployment Plan, Volume 1
335-CD-002	ECS COTS Deployment Plan, Volume 2
335-CD-003	ECS COTS Deployment Plan, Volume 3
335-CD-004	ECS COTS Deployment Plan, Volume 4
335-CD-005	ECS COTS Deployment Plan, Volume 5
335-CD-006	ECS COTS Deployment Plan, Volume 6
335-CD-007	ECS COTS Deployment Plan, Volume 7
335-CD-008	ECS COTS Deployment Plan, Volume 8

2.2 Applicable Documents

The following documents are referenced within this COTS Deployment Plan. Upgrades are directly applicable. These reference documents may contain policies or other directives that are binding upon the content of the current release of the COTS Deployment Plan.

IL-1-006	COTS Software License Administration and COTS Maintenance Support Project Instruction
MO-1-003-5	Operations Class NCR Management Process Work instruction
SD-1-034	Development Planning and Tracking of Operational NCRs (Sustaining Engineering) Project Instruction
TT-1-001	ECS Project Instruction for Acceptance Test Preparation, Execution, and Documentation
EMD-MPP-20	Monthly Patch Plan
EMD-EDP-23	ECS SDPD Documentation Package

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3. COTS Upgrade Overview

3.1 COTS Upgrade Process Overview

This document provides information on upgrades that are scheduled, tentatively planned to be initiated, or in progress through the period of 12/01/2003 through 12/01/2004. The COTS upgrade information detail that is available at the time of release of this plan is included in the following sections. Additional information and updates are also provided throughout the COTS upgrade process including:

- Weekly update and distribution of COTS Upgrade Team (CUT) Matrix (Refer to Appendix A for recent CUT Matrix)
- Weekly discussions with DAACs on hardware issues
- Deployment Monthly Patch Plan Updates
- COTS PSRs.

The sections that follow summarize the process by which upgrades to ECS COTS products are identified. The specific risks mitigated with each COTS product are discussed in the detailed section addressing the specific COTS product.

3.2 Mitigating Risks

Various factors are included in identifying COTS products for upgrades, replacements or additions. ECS works to mitigate risks in multiple ways. Defects against a COTS product are identified and tracked in a manner similar to defects with custom code. COTS products also have additional potential risks that need to be considered in reducing scheduling and operational impacts that are inherent to COTS products. The efforts that ECS makes to mitigate both types of risk are discussed in the following sections.

3.3 Identification of Defect/NCRs

A Non-Conformance Report (NCR) can be identified against a COTS product as well as against custom code. This process is discussed in ECS Project Instruction SD-1-034 and ECS Work Instruction MO-1-003-5. In many cases, risks related to the COTS product can be mitigated by custom code or configuration changes. Occasionally risks identified in the NCR process are best mitigated by an upgrade of a COTS product. In some cases, patches are provided by the vendor that will sufficiently mitigate the risk. Other cases may warrant that the risk be mitigated by a versioned upgrade of the COTS product. When an upgrade is identified as the resolution to an NCR, a patch or version upgrade is scheduled as soon as possible. If the problem warrants, the upgrade may be fielded as a “test executable” in advance of completing the full COTS upgrade process.

Some vendors release product fixes as patches on a frequent, recurring basis. Unless a special problem warrants urgent deployment of a certain patch, these patches are generally deployed as a bundle for EMD on a less frequent basis. This reduces potential impact to ECS custom code and the associated delivery schedules. These patch bundle upgrades are usually limited to COTS with substantial impact such as operating systems and databases.

3.4 Vendor Support

Although some terms and concepts differ, full life cycle support is provided for both COTS software and hardware products in the ECS Project. A significant part of this concept is maintenance support for these COTS products. The process for renewing and funding software maintenance agreements is discussed in ECS Project Instruction IL-1-006. The discussion of "support" in this document refers to the technical support provided by the vendor under the ECS maintenance contract with the vendor, not the payment for the maintenance support.

3.4.1 COTS Software Support

Software support agreements for most COTS vendors include consultation, problem assistance, patches and upgrades. In any COTS product life cycle, there are points at which a product may be "supported" at a different level. This support level is usually identified by the COTS product having reached one of the following milestones in the COTS product life cycle:

- Specific version is identified by the vendor to have reached end-of-life
- Specific version is identified by the vendor to have reached end-of-support
- Product is merged/evolved to another product or is made obsolete.

Many large vendors have formulated very specific policies on these milestones and when they occur. Some of these are published on the vendor's web site. Others will provide the criteria for these milestones, upon request. Other vendors have not defined a policy as would be preferred, but generally these are not COTS products with major impact for ECS.

Reaching any of these milestones has the potential to cause some level of risk to the project. To mitigate these risks, these milestones are tracked in the COTS Compatibility Matrix[1] and are updated on a quarterly basis. An overview of each of these milestones and their potential impact is provided in the following sections to serve as a reference for the upgrade discussions in Sections 4 and 5. The CUT reviews these milestones for every COTS software product when identifying the upgrades for each rolling wave period.

3.4.1.1 COTS Software Product End-of-Life: Best Effort Support

COTS products are under active support for a period after release. Many COTS products reach a stage where the vendor no longer provides development engineering support for the product version, i.e., no bug fixes to the code are provided. This phase is sometimes referred to as End of

[1] An example of some of the compatibility information maintained in the COTS Compatibility Database is provided in Appendix B.

Ship date, End of Life or Bug Fix Desupport dates. Some vendors, such as Sybase, call this phase End of Support (for bug fixes). Many vendors will continue to provide bug fixes on a best effort basis at this stage, but vendors may also identify that an upgrade is required to fix the identified problem. Planning upgrades when COTS products reach this stage mitigates risks and delays incurred by unplanned upgrades.

However, some levels of end-of-life risk can be tolerated and, in the case of COTS vendors that have a very rapid end-of-life cycle, tolerated prudently. The CUT team reviews the risk and the possible impacts when identifying the COTS upgrades for each rolling wave and mitigates the highest levels of risk possible with the COTS selected for upgrade.

The end-of-life policy among vendors differs considerably. The most common practice is to provide support for a specified number of older versions. The larger vendors with this type of support policy often support the most current version and the last two preceding it. Some vendors support only one preceding version, while others actively support only the most current version. The vendor's published version obsolescence policies or historical release schedules are captured to assist with planning and scheduling COTS upgrades to mitigate these risks.

3.4.1.2 COTS Software Product End-of-Support

All COTS products finally reach a stage where a specific product version is no longer supported, i.e., an upgrade to a supported version will be recommended to resolve almost any reported problem.

Many COTS vendors identify an end-of-support date for versions of their COTS products. In some cases, often with the major operating system vendors, this occurs *x* number of years after the end-of-life date or when two new major versions of the product have been released.

There are some vendors who do not have a defined end-of-support date, but the ability to obtain active support for resolution of problems with older versions decreases over time. There is greater risk that there will not be timely and effective resolution of problems that require "bug" fixes. The vendor's published version obsolescence policies or historical release schedules are captured to assist with planning and scheduling COTS upgrades to mitigate these risks.

3.4.1.3 COTS Software Product Evolution or Obsolescence

Vendors may also consolidate or sell specific products that no longer adhere to their product line. There have been a number of mergers among COTS product vendors in recent years that have also led to COTS software evolution or obsolescence.

COTS products are tracked to identify and mitigate risks that may be associated with any of the following:

- No new development done for a specific COTS product
- Stand-alone product merged with other products that will no longer be available as a separate product
- Product sold to a new vendor.

Some COTS products also have end-of-support risks associated with dependencies on other versions/models of COTS products. Risks associated with cross product software compatibility are discussed in more detail in the following section.

3.4.2 Cross Product Software Compatibility

Cross-product dependencies and compatibilities of COTS products are tracked to identify risk and risk mitigation steps. When upgrades are identified for any COTS product, a cross-product versioning support compatibility analysis is performed to identify any risks to the upgrade. The CUT team provides input on methods that may be considered to mitigate the identified risks. A consensus is reached on the most efficient method of mitigating the risks, balancing risk levels and available resources. The primary cross product compatibilities are discussed in the following sections and include:

- Operating System Version Compatibility
- Database Version Compatibility
- Compiler Version Compatibility
- Other COTS Product Compatibility
- Hardware/Software Product Compatibility

3.4.2.1 Operating System Version Compatibility

All COTS software is dependent on operating system (OS) versioning compatibility. COTS vendors identify the operating system versions that their product versions will support. In general, COTS vendors support the versions actively supported by the OS vendor and drop support for OS versions, which have reached end-of-life or are near to end-of-life. Changes in what OS version a product will support usually occur in a six month to eighteen month cycle, depending on the timing of the release of the new COTS product version.

Occasionally, a COTS vendor will announce that no new development/version is planned for one or more of the operating systems that are utilized for the COTS product. The CUT team identifies these risks and works to mitigate these risks in some of the following ways:

- Discussion with the vendor of the impacted COTS product
- Discussion with the Operating System Vendor on the withdrawal of support for a specific OS
- Identification of possible alternative operating system hosting
- Identification of alternative COTS/Freeware product or custom code implementation.

The COTS Hardware/Software compatibilities are discussed in section 3.4.2.5.

3.4.2.2 Database Version Dependencies

A number of COTS products in ECS are dependent on a Sybase database version. It is typical that although Sybase may actively support several Sybase ASE and OpenClient versions at the same time, a third-party COTS product might be certified for only one or perhaps two Sybase/OpenClient versions. In some cases, where the vendor has not formally certified a specific Sybase version, the vendor will resolve problems with some other versions and/or report that customers are using a version and reporting no problems. On occasion, there are identifiable incompatibilities between a COTS product version and a Sybase database version. The CUT team identifies these potential risks and works to mitigate them. These may include:

- Identification of the actual level of risk (vendor information/EDF testing, etc.)
- Identification of COTS product upgrade that is certified or capable of supporting compatibility with the identified baselined (or to be baselined) version
- Identification of alternative implementation (i.e., different operating system, script, etc.).

3.4.2.3 Compiler Version Compatibility

Some COTS products are certified for a specific compiler version. The level of support will be most complete if the certified compiler version is in use. Generally, only a single compiler version is certified for a specific OS version. The CUT team reviews upgrades to mitigate any identified risks associated with compiler version dependencies.

3.4.2.4 Other Compatibility Issues

The CUT team also identifies other potential risk factors associated with COTS products, including the following:

- Compatibility between related COTS products versions. For example, the RogueWave SourcePro products require compatible versions between the 3 libraries and also require compatible versions (same versions) across all OS platforms
- Some COTS products have dependencies on Motif versions and/or HDF versions.

3.4.2.5 Hardware/Software Compatibility

Hardware/software compatibility issues are identified and reviewed for risk and risk mitigation, including the following:

- Support for all planned and existing hardware devices will be available at the time of hardware upgrades
- Hardware firmware is currently supported.

3.4.3 Features/Performance Upgrades

Some COTS upgrades are identified to address performance issues and/or introduce new features/benefits. Functional and Performance specification requirements (F&PRS) are provided for the upgrades discussed in this document, when there is a change or impact to the current requirements met by the COTS products.

3.4.3.1 Performance

If performance risks are identified, the CUT team works to identify the necessary COTS upgrades/replacements or configuration changes to address the performance issues.

3.4.3.2 Features

If specific new features are required by EMD Development Organization or operational sites for a COTS product and/or the project, the CUT team reviews the requirements and identifies a COTS upgrade to provide the required features.

3.4.3.3 Hardware Support

As part of the COTS Life Cycle Implementation, EMD provides maintenance for hardware products deployed to the DAACs. Firmware maintenance is included with hardware maintenance support. Hardware maintenance for failed components is addressed with individual Maintenance Work Orders (MWO).

Hardware and firmware products can reach end-of-life and/or end-of-support, just as software products may reach this stage. Replacement or upgrade support for hardware components as a class or individually is not covered by standard industry hardware maintenance contracts. Hardware replacements and upgrades generally require procurement of new or additional components.

Risk for some hardware components that have reached end-of-life can be, or are mitigated by availability of a pool of hardware components in case replacement is necessary prior to a planned hardware upgrade.

In some cases, a hardware vendor may identify that equipment will no longer be supported after a certain date. In cases where there are other hardware, software and/or firmware dependencies that cause risks for the ECS Project, a migration or replacement to supported hardware devices is required to mitigate risks.

3.4.4 Monitoring and Mitigating Security Risks/Critical Bug Fixes

Critical security issues and other critical defects may also need to be mitigated over the course of a COTS product life-cycle. Security vulnerabilities occur most commonly in operating systems, but vulnerabilities can manifest themselves in Database, Web Server, Java modules and other COTS product implementations. Product patches and/or operating system patches may be required to mitigate the critical risk.

A weekly review of Operating System patches is performed. Information on the patches and fixes released come from various sources, including subscriptions to following automated notification systems:

- CERT notifications (on as needed basis)
- Sybase product notifications (daily)
- Oracle product notifications (on as needed basis)
- ClearCase patch releases/notifications (on as needed basis)

When automated e-mail notification is not available, an on-line review of recent patches and bug fixes for critical COTS software is conducted on a weekly basis. These would include the Solaris and IRIX operating systems and AMASS. This scan and review is primarily to identify critical patches required for fast-track delivery to the DAACs.

Criticality of delivery is determined by review by appropriate stakeholders, i.e., a security issue in Sybase ASE would be reviewed by the Security Group and the DDM group.

To expedite deployment, a critical security or product patch upgrade is evaluated using a fast-track process and, typically, is delivered as a COTS TE upon successful checkout in the PVC or VATC. The delivery is eventually followed by a conventional PSR. Table 3-1 provides examples of updates delivered under this process.

Table 3-1. Critical COTS Patches

COTS Product	Specific Impact Area	Criticality Issue	Delivery Mechanism
Solaris	Sendmail	CERT identified vulnerability to systems running the sendmail daemon.	CCR
IBM	Sendmail	CERT identified vulnerability to systems running the sendmail daemon.	CCR
AMASS	Off-line Media Manager	Off-line Media Manager identified as required for 9940A migration.	Engineering Technical Directive

3.5 COTS Upgrade Summary

Table 3-2 provides a summary of the COTS hardware and software upgrades expected or completed since the previous DID 335 document was published. The table also identifies any dependencies in these upgrades. Estimated delivery dates are also provided. These COTS upgrades are discussed in detail in sections 4 and 6 of this document.

Table 3-3 provides a summary of potential COTS upgrades being reviewed, but not currently scheduled. These possible COTS are briefly discussed in section 5 and 7 of this document.

Some COTS products discussed in previous Deployment Plans have had a change in upgrade status and may no longer be included in this document as planned upgrades. These are discussed in the following section.

Table 3-2. Planned COTS Hardware/Software Upgrades Summary (1 of 2)

COTS Product	Baseline Version	Upgrade Version	Dependencies/ Installation Sequence Requirements	Criticality for OPS Support	NCR	Estimated Delivery of PSR
Secure Shell (Unix)	2.40	3.2.3	None	Med.	None	10/01/03
Firewall Hardware Upgrades	N/A	N/A	None	Low	None	10/15/03 (11/19/03 for GSFC)
Secure Shell (PC)	4.0	5.2	None	Low	None	10/15/03
Sun Consolidation	N/A	N/A	In PSR	High	None	9/30/03
Volume Manager	3.04	3.5	None	Med.	None	10/25/03
EDS 196 LP DAAC Archive Upgrade	N/A	N/A	None	High	None	10/30/03
a2ps (PDS)	4.12	4.13b	Custom Code patch	Low	38197	11/04/03
Rimage/Windows 2000 Upgrades	5.0.34	6.0.35.1 /Windows 2000	None	Low	None	11/04/03
Forcheck	12.84	13.3.11	None	Low	None	11/06/03
XRP ILM Replacement	3.1.3	Remedy 4.5.2	All DAACs must “cutover” at same time	Med.	None	12/16/03
SANergy	3.2.1.6/8	3.2.1.49	None	Low	None	01/13/04
mkisofs	n/a	2.00.3	Custom Code patch	Low	38442	01/31/04
AMASS	5.3.1	5.3.3	None	High	37031 37033 37215 37690	Q1 2004
Portus	5.05	5.09 Proxy Patch	Synergy IV	Med.	None	Q1 2004
TomCat	3.2.3	4.1.24	None	Low	None	Q1 2004

Table 3-2. Planned COTS Hardware/Software Upgrades Summary (2 of 2)

COTS Product	Baseline Version	Upgrade Version	Dependencies/ Installation Sequence Requirements	Criticality for OPS Support	NCR	Estimated Delivery of PSR
Sun ONE Web Server	6.0	6.0SP6	None	Med.	None	Q1 2004
Legato Networker	6.02	7.1	None	Low	None	Q1 2004
MODAPS Upgrade	N/A	N/A	None	Low	None	12/03
Firewall AIX OS Upgrade	4.3.3ML10	5.1 ML4	Portus (5.09 General Upgrade) & Permeo 4.2.1	High	None	Q2 2004
Sybase ASE Upgrade	12.5	12.5.1	None	High	None	Q2 2004
Remedy ARS	4.5.2	5.1.2	ILM Cutover	Med.	None	Q2 2004
IRIX Upgrade	6.5.17	6.5.2x	None	Low	None	Q2 2004
Solaris 8 Patch Upgrade	11/02 Bundle	TBD	None	Low	None	Q3 2004
ClearCase	2002.05	2003.06	None	Low	None	Q4 2004
jConnect	5.5 EBF10349	5.5 EBF11473	Synergy IV	Low	None	Q4 2004
SQS	3.4.2.9	TBD	None	Med.	None	Q4 2004

Table 3-3. Possible COTS Hardware/Software Upgrades Summary (1 of 2)

COTS Product	Baseline Version	Upgrade Version	Dependencies/ Installation Sequence Requirements	Criticality for OPS Support	NCR	Estimated Delivery of PSR
Remedy Web Access for Trouble Ticketing	----	Remedy 5.1.2	Remedy 5.1.2 Upgrade & JDK	Med.	None	TBD
JDK	----	1.4.1	Remedy Web Access for Trouble Ticketing	Med.	None	TBD
ACSLS	6.1	7.x	None	Med.	None	TBD
MoveMail	MoveMail e-mail protocols	IMAP/POP3 e-mail protocols	None	Low	None	TBD
PC Anti-virus	------	TBD	None	Low	None	TBD

Table 3-3. Possible COTS Hardware/Software Upgrades Summary (2 of 2)

COTS Product	Baseline Version	Upgrade Version	Dependencies/ Installation Sequence Requirements	Criticality for OPS Support	NCR	Estimated Delivery of PSR
Builder Xcessory	5.08	6.1	None	Low	None	TBD
Sybase Replication Server EBF	12.5 EBF 10493	12.5 EBF TBD	None	Low	None	TBD
Sybase Open Client EBF	12.0 EBF 9921/9917	12.0 EBF TBD	None	Low	None	TBD
Archive Silo Upgrade	9940A	9940B	Task 102	High	None	TBD
Sun Consolidation Phase 2	-------	Workstation Consolidation	EMD Task	Med.	None	TBD
Catalyst 6000 Replacement	6000	6500	EMD Task	Med.	None	TBD
Additional GIG-E Capacity at GSFC	N/A	TBD	EMD Task	Med.	None	TBD
SAN Upgrades	SANergy	TBD	Evaluation completion	Med.	None	TBD
Apache	1.3.26	1.3.29	None	Med.	38823	TBD
AMASS	5.3.3	5.4	Poss. IRIX OS	Med.	None	TBD

3.6 Changes to Planned COTS Components Previously Identified

Several COTS product upgrades described in the previous COTS Deployment Plan will take place. The following sections identify products where there has been a change to the original upgrade plan. A brief description of the changes and current status are provided.

3.6.1 Insure ++

Insure ++ has been removed from the baseline. Insure ++ had been used at LP DAAC for debugging 64-bit code. Product was procured at a time when Purify did not provide support for debugging 64-bit code, but Purify has since added that support. The LP DAAC has installed the most recent version of Purify (2003.06.00) and is successfully using this version of Purify instead of Insure++.

3.6.2 Exabyte Driver

Exabyte Driver has been removed from the baseline. As recommended by the Architect's Office, ECS custom code has been modified to utilize 8mm stackers as standalone (non-robotic) devices. The Exabyte Driver replacement is, therefore, no longer needed.

3.6.3 Oracle Migration

Currently no Oracle upgrades are planned. It is planned that future Data Pool capabilities will replace functions now provided by the PDS Subsystem. With Oracle dropping support for future Oracle versions for SGI, starting with Oracle 9i, the cost of migration to other platforms and/or COTS products/custom code has become prohibitive to consider for a subsystem that will have decreasing requirements over time. Oracle 8i will continue to be utilized at the current baseline version (8.1.6) on the current PDS SGI hardware platforms running 6.5.x. Oracle certifies at the 6.5 level.

3.6.4 RogueWave Libraries

Upgrade of the RogueWave libraries is no longer planned. RogueWave has dropped support for the SGI IRIX Operating System with the delivery of ScourcePro Libraries, Edition 5. RogueWave Edition 2 libraries are the current baseline version. RogueWave has formally certified the Edition 2 SourcePro Libraries at only 6.5.8, but was certified for the IRIX 6.5 major release on the SGI site at the time of the Edition 2 release. No problems have been identified with the IRIX 6.5.14 and 6.5.17 releases. SGI has identified binary compatibility across all IRIX 6.5 releases and no issues are expected with subsequent IRIX 6.5.x upgrades. No major IRIX upgrades are expected for 5 to 7 years.

Under these circumstances, the support issues that had driven the original upgrade plans, no longer apply, i.e., no SGI support or certification is provided for SourcePro Edition 5, the only actively supported version. RogueWave libraries will continue to be utilized in the EMD custom code, but no upgrades are planned for Solaris 8 or SGI IRIX 6.5.

3.6.5 IMSL C & FORTRAN Numeric Libraries

The IMSL C & FORTRAN Numeric Libraries were provided for use by scientists in developing algorithms. No upgrades are currently planned for this COTS software. However, the products are still in use at LARC and other sites. LARC and other DAACs are planning to remove these commercial libraries from their scientific custom code over the coming year. Maintenance support for this software has been renewed through 2004. Once the DAACs have removed these libraries from their scientific custom code, the plan is the IMSL Numeric Libraries will be removed from the baseline and maintenance will not be renewed for these libraries beyond CY04.

3.6.6 Sun ONE Directory Server 5.2

Originally, deployment of Sun ONE Directory Server was planned to support a Synergy IV requirement to password-protect and control access to several subsystems GUIs, but a custom code solution will be provided instead. In the meantime, however, Sun ONE Directory Server, version 5.2, was delivered as a COTS TE to enable Access Control Lists (ACLs) support with iPlanet Web Server 6.0 because GSFC needed ACL support for the GSFC Sun Consolidation effort. The COTS product was delivered for all sites that wished to utilize web server ACLs until Synergy is deployed. After Synergy IV is deployed, the Sun ONE Directory Server will be removed from any DAACs that elected to implement it.

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4. EMD COTS Software Upgrades

This section identifies the COTS software products that are planned and scheduled for upgrade or are upgrades in progress as of December 2003. These COTS software products are discussed below in section 4.

4.1 AMASS 5.3.3

4.1.1 Description of COTS

AMASS is a COTS product from ADIC that provides File Storage Management System capabilities for ECS. Version 5.3.3 will provide fixes to known bugs identified since the release of version 5.3.1, including resolution to the NCRs identified in section 4.1.2.2 below.

4.1.2 Rationale for Upgrade

Upgrade to version 5.3.3 of AMASS is planned to address bug fixes and problems identified in version 5.3.3, including hanging incidents at LPDAAC.

4.1.2.1 Vendor Support

Upgrade is expected to resolve NCRs identified in the following section. Problems have been identified to the vendor and the vendor has reported that fixes for each NCR item are being incorporated into release 5.3.3.

4.1.2.2 NCR

The Table 4-1 identifies the NCRs that have been written against AMASS 5.3.1.

Table 4-1. NCRs Against AMASS 5.3.1

NCR	Description	State
ECSed 37031	cbque_iodne error	A
ECSed 37033	AMASS hanging on volstat	A
ECSed 37553	AMASS delete takes too ling to complete	A
ECSed 37690	AMASS hangs on e0drg11 and e0drg12	B

The upgrade to version 5.3.3 is expected to resolve the NCRs above.

4.1.2.3 Features/Performance Upgrades

Support for 4TB cache and improved vgimport and vgexport are features that will also be included with this version.

4.1.2.4 Cross Software Product Compatibility

This upgrade is compatible with all other COTS software currently baselined for the xxDRGxx hosts, including the SGI IRIX Operating System version. Certification through IRIX 6.5.20 is planned by ADIC for this release.

4.1.2.5 Operating System Compatibility

Software is currently baselined only for SGI hosts. Software is not baselined or planned for delivery on Solaris.

4.1.2.6 Hardware Product Compatibility

There are no hardware product compatibility issues with this upgrade.

4.1.3 Operational Impact

No operational impact beyond the downtime for installation of the COTS product is expected for the installation of this upgrade. Additionally, volcapacity for 9940B tape drives has been fixed with this release.

4.1.4 Custom Code Impact

The AMASS API is used with Data Pool custom code. This upgrade has been identified and is being utilized for a custom code patch delivery associated with this upgrade. The impacted custom code will be tested for delivery with this upgrade.

4.1.5 Security Impact

No security impacts have been identified for this COTS product upgrade.

4.1.6 Licensing Impact

Product requires new (replacement) license keys. These will be requested with the upgrade media and will be identified in the PSR document. Sufficient licenses for deployment have been identified.

4.1.7 External Drivers

No external drivers have been identified for this COTS product upgrade.

4.1.8 Other Impacts/Comments

No other impacts have been identified with this COTS product.

4.1.9 COTS Installation Sequence/Dependencies

There are no hardware or software dependencies for this upgrade.

4.2 XRP ILM Replacement

4.2.1 Description of COTS

XRP-II v3.1.3 and ACCELL v2.0.7.2.0, collectively serve as the ECS Baseline Manager (BLM) and Inventory/Logistics/Maintenance Manager (ILM) tools, however, ECS is replacing XRP-II and ACCELL with a Remedy implementation for ILM.

ILM capabilities enable operators to:

- track and maintain all of the key data pertaining to ECS contract purchased equipment including hardware, COTS software and software licenses, COTS documentation (hardware and software), spares and consumable items, and Government Furnished Equipment (GFE)
- store and maintain detailed corrective maintenance data on hardware, to the component level
- keep chronological histories (a record of transactions) of receipt, installation, and relocation of inventory items.

Remedy has Crystal Reports capabilities integrated into the product. Remedy ILM will utilize this bundled capability to support reporting capabilities. Development licenses for Crystal Reports have been procured to enable creation of reports that will be delivered with the Remedy ILM product.

4.2.2 Rationale for Upgrade

Substantial risk was identified for the continued evolution of the XRP-II COTS product to effectively support ECS requirements with changing operating systems and databases. XPR-II is a product with significant risks. XRP-II is a customized COTS product that is not regularly upgraded under a standard maintenance contract. Additional fees are required for upgrades such as for new operating system versions, which are normally covered by standard maintenance. Additionally, the database in use by the XRP-II vendor has been at end of support by the database vendor (Unify) for over two years. The vendor has identified that major database conversion, not covered by existing maintenance, would be needed. To mitigate this long term risk, migration of Inventory Logistics Management (ILM) functionality to Remedy is underway.

4.2.2.1 Vendor Support

The long term support risks and risk of overall product evolvability as described above are the drivers for migration to a new product to support ILM.

Remedy supports Sybase databases, so no additional database administration will be required. The current 4.5.2 version of Remedy is supported on Solaris 8 and is deployed to all DAACs.

Additional Remedy patches to bring Remedy 4.5.2 to the latest bug fixes will be included with the ILM delivery.

4.2.2.2 NCRs

There are a number of NCRs against XRP-II that are expected to be resolved with the migration to Remedy. These are identified in Table 4-2 below.

Table 4-2. NCRs Against XRP

NCR	Description	State
ECSed 27170	XRP-II: Installation Processing	V
ECSed 27174	XRP-II: EIN Relocation trx can update records incorrectly	V
ECSed 27187	XRP: Occasionally fails on startup on SPARC 20	V
ECSed 29253	AMASS hangs on e0drg11 and e0drg12	V
ECSed 15131	"Where" command not restoring data entry screen on exit (XRP-II)	V

4.2.2.3 Features/Performance Upgrades

A product with more current, user-friendly GUI interfaces is planned.

4.2.2.4 Cross Software Product Compatibility

The Remedy ILM Cross Software Products are identified in Table 4-32. There are no compatibility issues with these, or other software products.

Table 4-3. Remedy ILM Cross Product Compatibility.

Product	Compatibility Description	Bundled with Remedy ILM PSR
Sybase 12.5	Remedy 4.5.2 is certified for Sybase 12.5	No
Crystal Reports 8.5	Version 8.5 was used in Development and converted to Crystal Reports version 7 formats, which is compatible with Remedy 4.5.2	No – integration available in current installation for version 7 format.
WinZip 8.1	Product is compatible with Windows 2000, the OS of the Remedy Admin. PC.	Yes
PUTTY 0.53	Product is compatible with Windows 2000, the OS of the Remedy Admin. PC.	Yes
Secure Shell Commercial (SSH)	Compatibility with PUTTY	No

4.2.2.5 Operating System Compatibility

Targeted upgrade version is compatible with all operating systems version for which the product will be baselined:

- Solaris 8

4.2.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified that are associated with this COTS product. ILM will be installed on the Sun Consolidation External Server, the current Remedy server host.

4.2.3 Operational Impact

All DAACs must cutover to the Remedy ILM implementation at the same time. For this reason, the ILM implementation is planned to occur after the Sun Consolidation activities are completed. Some ILM downtime is expected while XRP data is being converted and migrated to Remedy.

4.2.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.2.5 Security Impact

No security impacts have been identified for this COTS product.

4.2.6 Licensing Impact

License keys are required for this COTS product. Remedy is already installed at the sites. No new license should be required at sites, although new license keys were required for EDF ilmserv installation.

4.2.7 External Drivers

Since cut-over to Remedy ILM is required of the all the DAACs at the same time, it has been recommended that the Remedy ILM implementation be targeted to occur after all Sun Consolidation activities are completed.

4.2.8 Other Impacts/Comments

The CM Server upgrade/reassignment will need to be addressed after Remedy ILM is installed and in use by the DAACs.

4.2.9 COTS Installation Sequence/Dependencies

Migration procedures for Remedy ILM will be addressed in the PSR.

4.3 Remedy ARS 5.1.2

4.3.1 Description of COTS

The Remedy Action Request System (ARS) is a software tool that can be configured to track data, automate processes, and maintain status of issues. ECS Remedy based applications consist of the following:

- Trouble Tickets Management Application:
  - provides the capability to electronically compose submit, store, maintain, and report the status of ECS Trouble Tickets
  - allows operations personnel to forward trouble tickets from one ECS site to another
  - generates reports and statistics
  - interfaces with user's and operator's email to provide automatic notification.
- Inventory, Logistics and Maintenance (ILM) Application (expected 12/04):
  - tracks ECS hardware inventory, logistics, and maintenance transactions
  - tracks and enables updating of data relevant to ECS purchased hardware, hardware components, and COTS software licenses
  - stores and enables updating of hardware maintenance data

4.3.2 Rationale for Upgrade

End of support for the current baseline version is the primary upgrade driver.

4.3.2.1 Vendor Support

Version 5.1.2 is the most current version release. Release of the next version, i.e., 5.2 or greater will bring current version 4.5.2 to end of support. The most recently available Generally Available (GA) version will be identified when planning phase of the upgrade task is initiated.

4.3.2.2 NCRs

Table 4-4. NCRs Against Remedy

NCR	Description	State	Sev.
ECSed 33576	Remedy Accessability/Functionality Problems	A	5
ECSed 35402	Remedy PC Client cannot forward trouble ticket	R	5

It is expected that both of these NCRs will be resolved with the upgrade to Remedy 5.1.2.

4.3.2.3 Features/Performance Upgrades

Features have been added to enhance Remedy maintenance and development capabilities. Not all of these new features are planned be utilized the initial 5.1.2 Remedy upgrade delivery described in this section. The Java and Web Services features are expected to be delivered with subsequent PSRs, such as the potential upgrade discussed in section 5.1 Remedy Web Access. The new features include:

- Web Authoring
- Web Navigation
- Global Deployment
- Faster Processing for Improved Performance

    - Java-based Servlets
    - JSP Pages
    - Multiple Servers on One Machine
- New support for Web Services
    - Publish
    - Call
- Enhanced E-mail Integration
- New LDAP Plug-ins
- New Fields
    - Currency Field
    - Date Field
    - Time Field
    - Checkbox.

Although support for Web-based interface and other Web-oriented services is included in this version, update of the current Remedy implementation to utilize these services is not planned to be delivered with this upgrade. This effort would require significant work in updating the code of the current Remedy applications. This update is being reviewed and may be addressed as a future EMD task.

4.3.2.4 Cross Software Product Compatibility

Remedy ARS has dependencies on Sybase ASE versions. Version 5.1.2 is certified for Sybase 12.5. Vendor has indicated that compatibility with 12.5.1 should not be an issue since this is a minor version upgrade. Version 9 of Crystal Reports will be utilized in developing reports delivered with this upgrade. The Remedy 5.1.2 User Tool installation includes optional Crystal Reports v9 reader libraries. Remedy ILM reports that were developed through use of a previous version of Crystal Report may have to be revised to support this upgrade. Impact to current WinZip and PuTTY products is not expected.

4.3.2.5 Operating System Compatibility

Remedy ARS 5.1.2 is certified for Solaris 8. Remedy is baselined and planned for delivery only on Sun hosts.

4.3.2.6 Hardware Product Compatibility

There are no identified hardware compatibility issues associated with this product.

4.3.3 Operational Impact

Remedy downtime will be required for installations and configuration. This will affect trouble-ticketing and ILM.

4.3.4 Custom Code Impact

There are no custom code impacts associated with this upgrade.

4.3.5 Security Impact

No security impacts have been identified for this COTS product.

4.3.6 Licensing Impact

There are no licensing issues with this software.

4.3.7 External Drivers

No external drivers have been identified for this COTS product.

4.3.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.3.9 COTS Installation Sequence/Dependencies

The Remedy upgrade is planned to occur after the Remedy ILM installation and cutover is completed.

4.4 a2ps 4.13 (PDS)

4.4.1 Description of COTS

A postscript-printing filter is used by PDS. This freeware product, a2ps, provides filtering of several print formats to postscript.

4.4.2 Rationale for Upgrade

The current baseline version does not support printing of ASCII characters above 127. Languages other than English utilize ASCII characters above 127, such as ö or é. These characters are sometimes required for providing accurate addresses for delivery of the PDS CDs and DVDs. The most recent version of this utility will provide support for all ASCII characters. An NCR has been submitted against this COTS product because an error results when ASCII characters above 127 are utilized.

4.4.2.1 Vendor Support

There are no end of life issues with the product. The most current version supports ACSII characters above 127.

4.4.2.2 NCRs

The NCR identified in Table 4-5 is not directly against the a2ps freeware product. However, the delivery of a2ps 4.13 will enable custom code patches to be delivered to directly resolve this NCR.

Table 4-5. NCRs related to a2ps.

NCR	Description	State
NCR 38197	ACSII chars above 127 cause PDS ODL Parser to fail and the order to fail.	T

4.4.2.3 Features/Performance Upgrades

Capability to support ASCII characters above 127 is provided with this upgrade.

4.4.2.4 Cross Software Product Compatibility

There are no cross software product compatibility issues associated with this upgrade.

4.4.2.5 Operating System Compatibility

There are no operating system compatibility issues with this upgrade. This utility is supported on the IRIX 6.5.x operating system. The utility is not delivered or baselined for the Solaris Operating System.

4.4.2.6 Hardware Product Compatibility

No hardware product compatibility issues related to this upgrade.

4.4.3 Operational Impact

No operational impact beyond the downtime for installation of the COTS product is expected for the upgrade installation of this product.

4.4.4 Custom Code Impact

Delivery of this upgrade will support custom code resolution of the NCR identified above.

4.4.5 Security Impact

No security impacts have been identified for this COTS product.

4.4.6 Licensing Impact

There are no license keys or license allocation issues related to delivery of this freeware product.

4.4.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.4.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.4.9 COTS Installation Sequence/Dependencies

The upgrade to version 4.13 is required before the planned PDS custom code patch related to the NCR identified above is installed. The upgrade may be installed anytime prior to the PDS custom code patch delivery.

4.5 mkisofs (PDS)

4.5.1 Description of COTS

Make ISO File System (mkisofs) is a utility that supports creation of a standard file system that can be utilized in the creation of CDs in PDS Subsystem. File systems to be used by PDS are Universal Disk Format (UDF), Joliet, long Joliet and Rock Ridge. This utility is part of the cdrecord 2.00.3 utilities. Only the mkisofs utility is needed and will be delivered.

4.5.2 Rationale for Upgrade

NCR 38442 has been submitted to address issues related to the inability to process a production job and deliver output to user. To address this issue PDS design is being reworked so that code fails over to a user-specified file system (UDF, Rock Ridge, long Joliet) on a Joliet failure. Delivery of mkisofs freeware will assist in the resolution of this NCR.

4.5.2.1 Vendor Support

Product is freeware. There are no vendor issues.

4.5.2.2 NCRs

The NCR addressed by this upgrade is identified in Table 4-6 below. The mkisofs utility will not resolve the NCR directly, but will enable a custom code patch (TE) to resolve the NCR.

Table 4-6. NCRs related to mkisofs

NCR	Sev.	Description	State
NCR 38442	2	PDS files have same Joliet name; no DVD produced.	A

4.5.2.3 Features/Performance Upgrades

Capability to support the UDF, Joliet, long Joliet and Rock Ridge formats will be provided with this delivery.

4.5.2.4 Cross Software Product Compatibility

There are no cross software product compatibility issues associated with this upgrade.

4.5.2.5 Operating System Compatibility

There are no operating system compatibility issues with this upgrade. This utility is supported on the IRIX 6.5.x operating system. The utility is not delivered or baselined for the Solaris Operating System.

4.5.2.6 Hardware Product Compatibility

No hardware product compatibility issues related to this upgrade.

4.5.3 Operational Impact

No operational impact beyond the downtime for installation of the COTS product is expected for the upgrade installation of this product.

4.5.4 Custom Code Impact

Delivery of this upgrade will support custom code resolution of the NCR identified above. TE delivery is planned.

4.5.5 Security Impact

No security impacts have been identified for this COTS product.

4.5.6 Licensing Impact

There are no license keys or license allocation issues related to delivery of this freeware product.

4.5.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.5.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.5.9 COTS Installation Sequence/Dependencies

The installation of mkisofs freeware product is required before the planned PDS custom code patch related to the NCR identified above is installed. The upgrade may be installed anytime prior to the PDS custom code patch delivery.

4.6 Sun ONE Web Server, Enterprise Edition 6.0SP6

4.6.1 Description of COTS

iPlanet Web Server, Enterprise Edition, has been renamed Sun ONE Web Server, Enterprise Edition. The Sun ONE Web Server product offers greater integration with other Sun ONE products in use with the EMD Project, including the Sun ONE compilers.

Sun ONE Web Server provides the capability to access documents and services using the HTTP protocol. This includes static HTML documents as well as the capability to execute programs either with Java or Common Gateway Interface (CGI). Upgrade version provides enhanced support for java and java features.

4.6.2 Rationale for Upgrade

End of bug fix support for current baseline version (6.0) is primary upgrade driver. Also, Data Pool intends to make use of more features available in this product and delivery of the most current and supported version is considered critical to this effort.

4.6.2.1 Vendor Support

Vendor has identified that the 6.0 version, with no Service Packs (SP), has reached end of bug fix support. Version 6.0SP6 was the most recently available version when the upgrade task was initiated.

4.6.2.2 NCRs

There are no NCRs issued against this COTS product.

4.6.2.3 Features/Performance Upgrades

No specific features or performance enhancements have been targeted for this upgrade.

4.6.2.4 Cross Software Product Compatibility

There are no cross-software compatibility issues with this COTS upgrade.

4.6.2.5 Operating System Compatibility

Sun ONE Web Server, version 6.0SP6, is certified for Solaris 8. There is no implementation on SGI.

4.6.2.6 Hardware Product Compatibility

There are no hardware compatibility issues associated with this product.

4.6.3 Operational Impact

Affected subsystems services will be interrupted for the period of the upgrade.

4.6.4 Custom Code Impact

Several subsystems, including Data Pool, currently use Sun ONE Web Server. There is no direct impact on EMD custom code, however this COTS product is used with EMD custom code. Regression testing will be conducted to ensure compatibility with ECS custom code that utilizes this COTS product.

4.6.5 Security Impact

No security impacts have been identified for this COTS product.

4.6.6 Licensing Impact

There are no licensing issues with this software. License keys are required.

4.6.7 External Drivers

No external drivers have been identified for this COTS product.

4.6.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.6.9 COTS Installation Sequence/Dependencies

There are no COTS installation sequence dependencies associated with this upgrade. A review of custom code dependencies will take place before PSR release to verify there are no custom code patches required for this COTS upgrade delivery.

4.7 Portus 5.09 FTP Proxy Patch for Data Pool

4.7.1 Description of COTS

Portus is the principal firewall software installed on the ECS firewall servers. The software provides individual proxy binaries. Additional individual proxy binaries can be added without reinstalling the existing software or impacting the existing installation and configuration.

4.7.2 Rationale for Upgrade

Data Pool has identified that additional Firewall logging capabilities are required for Synergy IV. These requirements include:

- Recording whether the transfer was completed or not.
- Identification of type of file transferred, i.e., compressed, TAR, etc.

These features are not included in the current version of Portus FTP Proxy, version 5.05. The vendor has agreed to provide these features in a new release. This version is currently available as a Generally Available (GA) version.

4.7.2.1 Vendor Support

There are no vendor support issues with this COTS product.

4.7.2.2 NCRs

No NCRs are outstanding for this COTS product.

4.7.2.3 Features/Performance Upgrades

Additional logging capabilities needed for Synergy IV will be included with this upgrade.

4.7.2.4 Cross Software Product Compatibility

There are no cross software product compatibility issues with this delivery. The patch will be compatible with the current and planned Portus 5.0x deliveries. There are no compatibility issues with any other COTS product.

4.7.2.5 Operating System Compatibility

The new Portus patch and previously delivered Portus 5.05 and patches are all compatible with both AIX 4.3.3 and AIX 5.1. An upgrade is planned to AIX 5.1. Refer to section 4.9 for additional information on this topic. This operating system upgrade is not currently planned to occur until after the delivery of the logging support patch for Data Pool.

4.7.2.6 Hardware Product Compatibility

There are no hardware product compatibility issues related to this Portus patch delivery.

4.7.3 Operational Impact

No operational impacts have been identified other than the installation downtime as identified in the PSR.

4.7.4 Custom Code Impact

There are no custom code impacts associated with this upgrade.

4.7.5 Security Impact

No security impacts have been identified for this COTS product.

4.7.6 Licensing Impact

There are no license keys or other licensing impacts associated with this upgrade.

4.7.7 External Drivers

No external drivers have been identified for this COTS product.

4.7.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.7.9 COTS Installation Sequence/Dependencies

No installation sequence or other dependencies have been identified with the upgrade of this COTS product, other than the patch must be installed prior to the delivery of Synergy IV.

4.8 Firewall Software Upgrade: Portus 5.09 General Upgrade

4.8.1 Description of COTS

Portus is the principal firewall software installed on the ECS firewall servers. The software provides individual proxy binaries. Additional individual proxy binaries can be added without reinstalling the existing software or impacting the existing installation and configuration.

4.8.2 Rationale for Upgrade

In order to fully support the AIX 5.1 upgrade, a full upgrade of all modules to Portus 5.09 is required.

4.8.2.1 Vendor Support

Vendor has identified that full support for AIX 5.1 will require an upgrade of all modules to version 5.09.

4.8.2.2 NCRs

No NCRs are outstanding for this COTS product.

4.8.2.3 Features/Performance Upgrades

No additional features or performance are specifically expected to be provided with this upgrade.

4.8.2.4 Cross Software Product Compatibility

An upgrade is required for compatibility with AIX 5.1. There are no other cross software compatibility issues.

4.8.2.5 Operating System Compatibility

An upgrade of all Portus modules to version 5.09 is required for full support for AIX 5.1.

4.8.2.6 Hardware Product Compatibility

There are no hardware product compatibility issues related to this Portus patch delivery.

4.8.3 Operational Impact

Planning is in progress to minimize operational impact of the Firewall Server upgrades related to the AIX 5.1 Operating System upgrade to the extent possible.

4.8.4 Custom Code Impact

There are no custom code impacts associated with this upgrade.

4.8.5 Security Impact

No security impacts have been identified for this COTS product.

4.8.6 Licensing Impact

It is expected that the same license key for the current installation will be used with the Portus 5.09 upgrade. There are no issues to providing new license keys if these are required. The steps and procedure will be identified in the PSR.

4.8.7 External Drivers

No external drivers have been identified for this COTS product.

4.8.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.8.9 COTS Installation Sequence/Dependencies

The PSR for AIX 5.1 and the PSR for Portus 5.09 will identify the specific installation sequence dependencies related to this upgrade.

4.9 Firewall Software Upgrade: AIX Operating System 5.1

4.9.1 Description of COTS

The Firewall Servers currently run version 4.3.3 of the IBM AIX Operating System. This version of the AIX Operating System will reach end of support on December 31, 2003. IBM has released AIX 5.1 and AIX 5.2. No end of life or end of support has been announced for either version.

A 2nd GSFC Firewall has been delivered to GSFC with AIX 5.1 and Portus 5.09 installed. There are no issues associated with the upgrades to these versions.

4.9.2 Rationale for Upgrade

The current version of the AIX Operating System running on all EMD Firewall Servers will reach end of support on 12/31/2003. An upgrade is required to an actively supported version of the AIX Operating System in order to assure that patches and other bug/security fixes are available for this critical infrastructure element. AIX 5.1 has been identified as the targeted upgrade operating system because this AIX operating system version has been certified and tested by the two major COTS comprising the Firewall software solution:

- Portus Software
- Permeo Application Security Platform (formerly referred to as eBorder Server)

Upgrades to both of these products will be required for compatibility with AIX 5.1. AIX 5.2 has not been tested or certified for any currently available version of the products above. Therefore this later version of AIX will not be used for the upgrade.

4.9.2.1 Vendor Support

IBM identified more than two years ago that AIX version 4.3.3 would reach end of support on 12/31/2003. AIX 4.3.3 is the current baseline version.

4.9.2.2 NCRs

There are no NCRs associated with this COTS product upgrade.

4.9.2.3 Features/Performance Upgrades

No specific new features or performance improvement is targeted with the upgrade. Upgrade is driven by end of support for the current operating system version.

4.9.2.4 Cross Software Product Compatibility

As mentioned above, the two Firewall Software products are vendor-certified and tested for specific operating system versions. The compatibility of these products with the proposed AIX operating system versions are outlined below.

- Portus 5.09

  The vendor has certified Portus 5.09 for AIX 5.1. Refer to section 4.8 Firewall Software Upgrade: Portus 5.09 General Upgrade for additional information.

- Permeo Application Security Platform (eBorder Server)

  The current version of Permeo Application Security Platform (eBorder Server) (4.02) has not been certified or tested with AIX 5.1 or AIX 5.2. The most recently released version

of Permeo Application Security Platform (4.2.1) has been tested and certified for AIX 5.1. No certified version of Permeo Application Security Platform has been identified currently for AIX 5.2. For additional information on this upgrade refer to section 4.10 Firewall Software Upgrades: Permeo Application Security Platform.

Since recent versions of both of the Firewall Server software components have been certified for AIX 5.1 and no version is currently available for either product that is certified for AIX 5.2, the AIX Operating System upgrade will target AIX 5.1.

4.9.2.5 Operating System Compatibility

AIX 5.1 Maintenance Level (ML) 4 will be the targeted AIX Operating System upgrade version. Upgrades of the two major Firewall software products are planned for operating system compatibility.

4.9.2.6 Hardware Product Compatibility

IBM AIX 5.1 is compatible with the IBM RS 6000 hosts used as the Firewall Servers.

4.9.3 Operational Impact

The Firewall will be unavailable for the time needed to perform the AIX, Permeo Application Security Server and Portus upgrades. The time is estimated at 3 to 4 hours. An update to this estimate will be available in the PSR and in the CUT Matrix reflecting the experience with the VATC and PVC installs.

4.9.4 Custom Code Impact

There is no direct custom code impact related to this upgrade. No custom code runs on the Firewall Server. Regression and load tests will be conducted, as ECS custom code is required to utilize this critical infrastructure component.

4.9.5 Security Impact

There are no security impacts related to this upgrade, other than loss of the firewall due to the downtime for the upgrade, which is planned to be as minimal as possible.

4.9.6 Licensing Impacts

There are no license keys or other license impacts associated with this upgrade.

4.9.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.9.8 Other Impacts/Comments

There are no other identified impacts to this upgrade.

4.9.9 COTS Installation Sequence/Dependencies

Upgrades of Portus and Permeo Application Security Platform will be required with the upgrade of AIX 5.1. The combined AIX 5.1/Permeo/Portus PSR will address in detail the sequence and dependencies that will be required for this upgrade.

4.10 Firewall Software Upgrades: Permeo Application Security Platform 4.2.1

4.10.1 Description of COTS

Permeo Application Security Platform (formerly called eBorder Server) is a COTS software product that provides SOCKS protocol support. There are server, client and development parts of the eBorder software currently utilized by ECS. This upgrade will involve only the Permeo Application Security Platform (eBorder Server) software.

4.10.2 Rationale for Upgrade

Upgrade is required principally for certification with the planned IBM AIX 5.1 upgrade discussed in section 4.9 Firewall Software Upgrade: AIX Operating System 5.1. The vendor will provide patches and bug fixes for version 4.2.1 before they are provided for older versions of the product. Version 4.02 is expected to reach end of life shortly with the release of version 4.2.1. At this stage in the product life cycle, a limited number of patches will be available for this version.

4.10.2.1 Vendor Support

The AIX 4.3.3 end of support issue was identified to the vendor. The vendor planned and implemented testing for AIX 5.1 for version 4.2.1.

4.10.2.2 NCRs

There are no NCRs associated with this COTS product.

4.10.2.3 Features/Performance Upgrades

No specific additional features or performance are expected with this upgrade. Upgrade is required for compatibility with the operating system upgrade to AIX 5.1.

4.10.2.4 Cross Software Product Compatibility

The Permeo Application Security software upgrade to version 4.2.1 is compatible with all other firewall software, including the planned AIX 5.1 Operating System version. Permeo has confirmed that the Application Security Platform upgrade to version 4.2.1 will not impact client or custom code developed with Permeo Software Development Kit (SDK) or require upgrades of these products.

4.10.2.5 Operating System Compatibility

The Permeo Application Security Platform software upgrade will be compatible with AIX 5.1, the planned Firewall Server Operating System upgrade discussed above.

4.10.2.6 Hardware Product Compatibility

The Permeo Application Security software upgrade is compatible with all Firewall hardware, operating system and network implementations.

4.10.3 Operational Impact

Upgrades will be planned to minimize operational downtime.

4.10.4 Custom Code Impact

No custom code impact is expected. The Permeo software clients and libraries used by development will not need to be upgraded and will be compatible with the Permeo Application Security Platform server software upgrade to version 4.2.1 described in this section.

4.10.5 Security Impact

Firewall will be unavailable during the upgrade. It is estimated this will be 3 to 4 hours. Installation in VATC will enable more precise definition of this time frame.

4.10.6 Licensing Impacts

New license keys will be required for this upgrade. Directions for obtaining new keys will be provided in the PSR document. Sufficient licenses are available for the planned deployment.

4.10.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.10.8 Other Impacts/Comments

There are no other identified impacts to this upgrade.

4.10.9 COTS Installation Sequence/Dependencies

This upgrade will be delivered to support upgrade of the AIX Operating System to version 5.1. The combine PSR for AIX 5.1/Permeo/Portus will identify the installation sequence dependencies for this upgrade.

4.11 Secure Shell 3.2.3 (UNIX)/ 5.2 (PC)

4.11.1 Description of COTS

Secure Shell is a secure, drop-in replacement for the inherently non-secure Berkeley R-commands such as rlogin, rsh, and rcp. The server installations will be installed on both DAAC operational hosts and M&O hosts.

4.11.2 Rationale for Upgrade

Security features provided in the 3.2.3 UNIX version and the 5.2 PC version are the primary upgrade drivers. Current baseline versions have also reached end of support. Upgrade for UNIX and upgrade for PC version will be delivered as two separate PSRs, as their installations are significantly different and there are no dependencies between these installations.

4.11.2.1 Vendor Support

The upgrade versions specified are the most recent versions available. Source code for both products will be recompiled for Solaris 8 compatibility. Binaries will be downloaded for PC installations.

4.11.2.2 NCRs

No NCRs are identified in association with this COTS product.

4.11.2.3 Features/Performance Upgrades

No additional features or performance upgrades are expected from this upgrade.

4.11.2.4 Cross Software Product Compatibility

There are no known software product compatibility issues.

4.11.2.5 Operating System Compatibility

Source code is compiled and tested for Solaris 8 and IRIX 6.5.x. Binaries are provided for PC operating systems. Delivery supports Windows 2000.

4.11.2.6 Hardware Product Compatibility

There are no identified hardware compatibility issues associated with this product.

4.11.3 Operational Impact

No operational impacts have been identified other than the installation downtime as identified in the COTS product PSR.

4.11.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.11.5 Security Impact

Upgrade will provide security enhancements and fixes.

4.11.6 Licensing Impact

Secure Shell commercial does not require license keys.

4.11.7 External Drivers

No external drivers have been identified for this COTS product.

4.11.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.11.9 COTS Installation Sequence/Dependencies

There are no installation sequence or other dependencies for this COTS product installation.

4.12 Forcheck 13.3.11

4.12.1 Description of COTS

Forcheck is a FORTRAN language checker used to debug FORTRAN language programs.

4.12.2 Rationale for Upgrade

The primary driver for upgrade is end of support for current version as of 12/31/2003.

4.12.2.1 Vendor Support

Vendor has identified that current version will reach end of support as of 12/31/2003.

4.12.2.2 NCRs

No NCRs are associated with this upgrade.

4.12.2.3 Features/Performance Upgrades

No additional features or performance gains are expected with this upgrade.

4.12.2.4 Cross Software Product Compatibility

There are no known software product compatibility issues. Product works with Sun FORTRAN compilers.

4.12.2.5 Operating System Compatibility

Forcheck 13.3.11 is compatible with Solaris 8.

4.12.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified.

4.12.3 Operational Impacts

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.12.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.12.5 Security Impact

No security impacts have been identified for this COTS product.

4.12.6 Licensing Impact

License keys are required for this COTS product. Procedures to obtain/install the license keys will be included with the PSR.

4.12.7 External Drivers

No external drivers have been identified.

4.12.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.12.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

4.13 Spatial Query Server (SQS) 4.x

4.13.1 Description of COTS

Spatial Query Server (SQS) is a state-of-the-art, multithreaded database engine which supports:

- the definition of spatial datatypes (e.g., point, line, polygon)
- a set of spatial operations for these datatypes (e.g. intersect, inside, outside)
- a spatial indexing schema for efficient data retrieval

4.13.2 Rationale for Upgrade

The major driver for upgrade is announced end of support date for SQS version 3.4.2.9. A new release of SQS is expected by the first quarter of 2004. With this release, the end of support for version 3.4.2.9 will be set a year from the release date. SQS upgrades have traditionally been started shortly after the new version has been released in order to have the maximum amount of time for integration and testing before the current version reaches end of support.

4.13.2.1 Vendor Support

The vendor has identified that a new release is expected in the first quarter of the year. This release date will set the end of support for version 3.4.2.9 to occur one year from this release date.

4.13.2.2 NCRs

There are no NCRs against this COTS product.

4.13.2.3 Features/Performance Upgrades

No specific features or performance gains are expected with this upgrade.

4.13.2.4 Cross Software Product Compatibility

SQS is compatible with Sybase Open Client 12.5. Sybase OpenClient 12.5 is installed locally for use with SQS. There are no other compatibility issues. Support for Sybase 12.5.1 will need to be verified on release of version 4.x.

4.13.2.5 Operating System Compatibility

Upgrade version is supported on IRIX 6.5.x, which includes IRIX 6.5.17 and later releases.

4.13.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified.

4.13.3 Operational Impacts

No operational impacts have been identified beyond installation downtime impacts identified in the PSR.

4.13.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.13.5 Security Impact

No security impacts have been identified for this COTS product.

4.13.6 Licensing Impact

License keys are required for this COTS product. Procedures to obtain/install the license keys will be included with the PSR.

4.13.7 External Drivers

No external drivers have been identified.

4.13.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.13.9 COTS Installation Sequence/Dependencies

Installation sequence and dependency issues will be reviewed when new version is released.

4.14 Legato Networker 7.1

4.14.1 Description of COTS

Legato Networker is a system backup and recovery COTS application that provides the capability to archive, administer, backup, and recover data for operating systems in use for EMD.

4.14.2 Rationale for Upgrade

The major driver for the upgrade is that the vendor is expected to drop support for Legato Networker 6.0.2, the current baseline version for Sun and SGI hosts. Upgrade to version 7.1 will also add certified support for recent versions of IRIX, through IRIX 6.5.20.

Upgrades to the current PC versions of Legato are also planned to bring consistency to all delivered Legato versions. Linux versions will be upgraded to version 7.0, as version 7.1 is not certified for Linux 7.3.

4.14.2.1 Vendor Support

An end of support date has not been announced, but the vendor estimates that end of support may occur by 01/2004.

4.14.2.2 NCRs

There are no NCRs associated with this COTS product.

4.14.2.3 Features/Performance Upgrades

No specific performance or feature enhancements are targeted to be provided with this upgrade.

4.14.2.4 Cross Software Product Compatibility

Version 7.0 will be used to upgrade the 7.3 Linux machines, since Networker 7.1 is not certified for Linux 7.3. There are no other known software product compatibility issues related to this upgrade.

4.14.2.5 Operating System Compatibility

Legato Networker 7.1 is certified for all current platforms for which it is utilized:

- Solaris 8
- IRIX 6.5.x through IRIX 6.5.20
- Windows 2000

Version 7.0 will be utilized with Linux 7.3, as version 7.1 is not certified for this Linux OS version.

4.14.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified that are associated with this COTS product.

4.14.3 Operational Impacts

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.14.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.14.5 Security Impact

No security impacts have been identified for this COTS product.

4.14.6 Licensing Impact

License keys are required for this COTS product, but upgrades do not require new license keys. License key updates are required for new installations only. Sufficient licenses for deployment have been identified. Procedures to obtain/install the license keys will be included with the PSR.

4.14.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.14.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.14.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

4.15 Volume Manager 3.5 for Sun Consolidation

4.15.1 Description of COTS

Veritas Volume Manager builds volumes on top of physical disks to provide a set of volume management capabilities such as disk striping and mirroring. Volume Manager objects can be manipulated in a variety of ways to optimize performance, provide redundancy of data, and perform backups or other administrative tasks on one or more physical disks without interrupting applications. As a result, data availability and disk subsystem throughput are improved.

4.15.2 Rationale for Upgrade

The Sun Consolidation implementation replaced a number of older Sun platforms, which had reached End of Service Life (EOSL). Sun Fire V880s were used as the replacement hosts. Sun technical support identified that only version 3.5 of Volume Manager was suitable for use with Sun Fire V880s. Delivery of this version was therefore planned for the Sun Consolidation Internal Servers.

4.15.2.1 Vendor Support

Version 3.5 is required for Sun Fire V880 hosts.

4.15.2.2 NCRs

No NCRs are associated with this upgrade.

4.15.2.3 Features/Performance Upgrades

No additional features or performance gains are expected with this upgrade.

4.15.2.4 Cross Software Product Compatibility

There are no known software product compatibility issues, other than the operating system dependence mentioned in the following section.

4.15.2.5 Operating System Compatibility

Volume Manager 3.5 is certified for Solaris 8. The product is not baselined or planned for delivery on IRIX platforms.

4.15.2.6 Hardware Product Compatibility

There are no hardware product compatibility issues for this delivery for the Array configuration associated with the Sun Consolidation Internal Server hosts. Upgrade to version 3.5 is currently not recommended for other Sun Storage Array implementations because this version has not been certified for these older array devices. Hardware Engineering is working on EMD certification of this version for older Storage Array devices.

4.15.3 Operational Impacts

No operational impacts have been identified other than the installation downtime as identified in the COTS product PSR.

4.15.4 Custom Code Impact

There are no custom code impacts associated with this COTS product.

4.15.5 Security Impact

There are no security impacts associated with this COTS upgrade.

4.15.6 Licensing Impact

License keys are required for this COTS product. A license key is bundled with the A5200 Storage Arrays that are targeted for configuration with the Sun Consolidation Internal Server. A license key is automatically made available once the software detects an appropriate RAID device is attached.

4.15.7 External Drivers

No external drivers have been identified.

4.15.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.15.9 COTS Installation Sequence/Dependencies

The only installation dependency is that the A5200 Storage Arrays must be attached prior to installation Volume Manager 3.5 on the Sun Consolidation. A license key will only be available to complete installation if an appropriate RAID device is attached and identified by the installation software.

4.16 IRIX 6.5.22 Patch Upgrade

4.16.1 Description of COTS

SGI provides operating system patch updates as minor operating system releases on a quarterly basis in order to provide patch baseline consistency for IRIX 6.5 hosts.

4.16.2 Rationale for Upgrade

The rationale for upgrading the ECS IRIX operating system baseline to IRIX 6.5.22 is that bug fixes are not guaranteed to be provided for IRIX Operating System versions older than 1 year or 3 versions prior to the current IRIX 6.5.x release. IRIX 6.5.17, the current baseline IRIX patch version, was released by the vendor on 8/2002. Additionally, some of the more recent SGI HW platforms, including Origin 350s, require an IRIX operating system version of 6.5.20 or above. Upgrade will provide support for new SGI Hardware options and bring IRIX to a fully supported version.

4.16.2.1 Vendor Support

Vendor has identified that guaranteed bug fixes are not available for IRIX Operating System patch levels older than one year. IRIX 6.5.17, the current baseline IRIX patch version, was released by the vendor on 8/2002, more than one year ago.

4.16.2.2 NCRs

There are no NCRs associated with this COTS product.

4.16.2.3 Features/Performance Upgrades

No specific performance or feature enhancements are targeted to be provided with this upgrade, although some EMD Tasks under consideration will require IRIX 6.5.20 or higher.

4.16.2.4 Cross Software Product Compatibility

While most ECS COTS products, such as Sybase, are certified for IRIX 6.5.x, there are three COTS products that certify software versions at the patch or "dot" release version levels. These COTS products are Legato Networker, Rational ClearCase and AMASS.

- ClearCase:

  An upgrade of ClearCase is planned because of end of support issues. This upgrade may be scheduled to occur before delivery of IRIX 6.5.22. However, although the vendor's formal certification is preferred, no problems have been experienced with running ClearCase on a later version of IRIX than is formally certified by the vendor. If schedule identifies that the IRIX upgrade will precede the planned ClearCase upgrade, ClearCase 5.0 will be tested with the IRIX operating system patch upgrade to verify compatibility.

- Legato Networker:

Testing will include compatibility testing with Legato Networker if the vendor has not formally certified for IRIX 6.5.22 operating system patch release. Uncertified versions have been baselined and used in ECS in the past and no problems have resulted. Legato Networker 7.1 is expected to be the baselined Networker version at the time of IRIX operating system upgrade. Legato Networker 7.1 is currently certified through IRIX 6.5.20.

- AMASS 5.3.3:

  At least one AMASS upgrade is planned for the coming year. This is discussed in section 4.1 AMASS 5.3.3. This version will be certified through at least IRIX 6.5.20. ADIC is currently reviewing support for IRIX 6.5.22 for AMASS version 5.3.3. If vendor testing identifies that there are no issues with supporting AMASS version 5.3.3 on IRIX 6.5.22, IRIX 6.5.22 will be the targeted upgrade version for all SGI platforms. If the vendor identifies that IRIX 6.5.22 cannot be supported, IRIX 6.5.20 will be targeted as the upgrade version for AMASS hosts (DRG hosts), while all other SGI machines will be upgraded to IRIX 6.5.22.

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4.16.2.5 Operating System Compatibility

All SGI hardware will be upgraded to the delivered IRIX 6.5.22 patch level, unless 6.5.20 is required for support of the AMASS DRG hosts, as discussed in the section above.

4.16.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified. The Origin 350s, that are planned for delivery with Task 102, require a minimum of IRIX 6.5.20. The targeted 6.5.22 (or 6.5.20 if necessary) upgrade will meet this minimum operating system level.

Although the vendor has announced that IRIX 6.5.22 will be the last version that will support older IRIX hardware, including the Challenge and Indigo units, all hardware that might have been impacted by this announcement has been removed from the EMD baseline.

4.16.3 Operational Impact

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.16.4 Custom Code Impact

No expected custom code impacts are expected with this COTS product. Custom code will be tested for compatibility. SGI has a published binary compatibility policy for custom code through all 6.5.x releases. Additionally, there were no custom code issues with the IRIX 6.5.14 upgrade or the IRIX 6.5.17 upgrade, and none are expected with the IRIX 6.5.22 upgrade. The previous IRIX 6.5.x upgrades have had no negative issues for custom code. In some cases, outstanding custom code issues have been resolved due to fixes in the patches delivered with the upgrade.

4.16.5 Security Impact

No security impacts have been identified for this COTS product. However, updated security patches are generally included in these "patch" releases.

4.16.6 Licensing Impact

License keys not are required for this COTS product.

4.16.7 External Drivers

GSFC has identified that they recommend more frequent IRIX upgrades to support software development.

4.16.8 Other Impacts/Comments

No additional impacts are expected from this upgrade.

4.16.9 COTS Installation Sequence/Dependencies

No COTS installation sequence dependencies have been identified at this time. This issue will be reviewed again when the final COTS baseline is defined for this upgrade.

4.17 Solaris 8 Patch Upgrade

4.17.1 Description of COTS

Sun publishes and recommends patch upgrades on a regular basis. These patch upgrades have little or no negative impacts on custom code or COTS. The original Solaris 8 was delivered with an additional patch bundle and a patch bundle upgrade PSR was delivered on 5/2003. This delivery provided fixes for security/custom code/hardware-related issues and had no negative impacts on operational functions.

4.17.2 Rationale for Upgrade

Delivery of previous Solaris 8 patch bundles have been very low risk and have provided fixes to outstanding issues, i.e., mitigated operational risk. Solaris 8 patches are reviewed by the COTS Team on a regular basis and forwarded for review by technology area experts when appropriate.

4.17.2.1 Vendor Support

Sun publishes patches on a daily basis. These are reviewed on a weekly basis for immediate criticality and for future delivery as patch bundles. Sun updates a recommended patch bundle and other patches on at least a weekly basis. This information is published at http://sunsolve.sun.com/patches/.

4.17.2.2 NCRs

There are no NCRs associated with this COTS product.

4.17.2.3 Features/Performance Upgrades

No specific performance or features enhancement are targeted to be provided with this upgrade, although beneficial fixes are expected to result.

4.17.2.4 Cross Software Product Compatibility

No impact is expected to any COTS product currently baselined for Solaris 8. In large part, the patches are upgrades to existing Solaris 8 patches.

4.17.2.5 Operating System Compatibility

All Sun hosts will be patched to the same patch level, although patch baselines for individual machines will differ because of hardware differences. Patches that are hardware-specific do not install except when the hardware configuration is present on the machine.

4.17.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified that are associated with this COTS product. Patches are included for all baselined hardware, including those for Sun V880s. Hardware-specific patches are included when appropriate for EDM Sun configurations.

4.17.3 Operational Impact

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.17.4 Custom Code Impact

Solaris 8 patch bundles typically include updates to kernel and library patches. Custom code will be tested for compatibility to verify that there are no impacts due to operating system libraries or kernel updates. Previous Solaris 8 patch upgrades have had no negative impacts on custom code and have provided fixes for outstanding issues.

4.17.5 Security Impact

No security impacts have been identified for this COTS product. It is expected that a significant number of security patch updates will be included in the final patch delivery. Critical operating system and security patches are delivered early via CCR when risk is considered critical.

4.17.6 Licensing Impact

License keys are not required for this COTS upgrade.

4.17.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.17.8 Other Impacts/Comments

No additional impacts are expected from this upgrade.

4.17.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

4.18 Sybase ASE 12.5.1

4.18.1 Description of COTS

Sybase Adaptive Server Enterprise (ASE) is a data management platform transaction-intensive enterprise applications. Sybase ASE is supported on both the Sun and SGI platforms.

4.18.2 Rationale for Upgrade

An EBF upgrade was originally planned for Sybase ASE. There were no end of life or end of support issues for Sybase ASE version 12.5.0.1. However, there were two issues that identified that an EBF would be needed: a security issue for both Sun and SGI and an 803/time slice issue for SGI. The 803/time slice issue was recently identified by EMD to Sybase. Sybase delivered a proposed fix, which did not include the security and other desirable fixes.

Sybase provided the 803/time slice fix as an EBF for 12.5.0.1 as requested, but identified that this fix would not be included the final 12.5.0.x EBF, but would be forwarded to the new 12.5.1 version. Thus, in order to have this fix in a fully supported version, upgrade to 12.5.1 would be required. Therefore a full upgrade is planned instead of an EBF upgrade. Version 12.5.1 is currently released for both Sun and SGI.

4.18.2.1 Vendor Support

Use of vendor patches and EBFs to mitigate risk is part of the COTS upgrade process.

4.18.2.2 NCRs

There are no NCRs associated with this COTS product.

4.18.2.3 Features/Performance Upgrades

No specific performance or feature enhancements are targeted to be provided with this upgrade.

4.18.2.4 Cross Software Product Compatibility

There are no cross software compatibility issues with this upgrade.

4.18.2.5 Operating System Compatibility

Targeted upgrade version is compatible with all operating systems version for which the product will be baselined:

- Solaris 8
- IRIX 6.5.x

4.18.2.6 Hardware Product Compatibility

There are no hardware compatibility issues with this upgrade.

4.18.3 Operational Impact

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.18.4 Custom Code Impact

There are no direct custom code impacts associated with this COTS product. Testing will verify integration of custom code with the new version of Sybase.

4.18.5 Security Impact

EBF upgrade will resolve security issue identified by vendor.

4.18.6 Licensing Impact

There are no license issues associated with this upgrade.

4.18.7 External Drivers

There are no external drivers associated with this upgrade.

4.18.8 Other Impacts/Comments

No other impacts will be associated with this upgrade.

4.18.9 COTS Installation Sequence/Dependencies

There are no installation sequence or other dependencies associated with this upgrade.

4.19 Tomcat 4.1.24

4.19.1 Description of COTS

Tomcat is the servlet container that is used in the official Reference Implementation for the Java Servlet and JavaServer Pages technologies. The Java Servlet and JavaServer Pages specifications are developed by Sun under the Java Community Process.

4.19.2 Rationale for Upgrade

Tomcat 4.1.24 implements a new servlet container (called Catalina) that is required by Synergy IV. Catalina implements the Servlet 2.3 and JSP 1.2 specifications from Java Software, and it includes many additional features that make it a more useful platform for developing and deploying web applications and web services. It permits Data Pool to run using a single installation of Apache and Tomcat rather than an installation "per" mode as is required today.

Tomcat 4.1.24 is the latest production release. It contains significant enhancements, including:

- Performance and memory efficiency improvements
- JSP and Struts based administration web application
- New Coyote connector (HTTP/1.1, AJP 1.3 and JNI support)
- JMX based administration features
- Rewritten Jasper JSP page compiler
- Enhanced manager application support for integration with development tools
- Custom Ant tasks to interact with the manager application directly from build.xml scripts.

4.19.2.1 Vendor Support

Product is freeware. There are no vendor support issues associated with this upgrade.

4.19.2.2 NCRs

There are no NCRs associated with this COTS product.

4.19.2.3 Features/Performance Upgrades

Version 4.1.24 will provide support for Servlet 2.3 and JSP 1.2 specifications that will be used with Synergy IV.

4.19.2.4 Cross Software Product Compatibility

There are no cross product compatibility issues with this COTS upgrade. Tomcat 4.1.24 is compatible with the current baseline versions of Java-based products used in Data Pool, including JRE 1.4.1.

4.19.2.5 Operating System Compatibility

Targeted upgrade version is compatible with all operating systems versions for which the product will be baselined, which include:

- IRIX 6.5.x
- Solaris 8

4.19.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified that are associated with this COTS product.

4.19.3 Operational Impact

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.19.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.19.5 Security Impact

No security impacts have been identified for this COTS product.

4.19.6 Licensing Impact

There are no licensing issues associated with this COTS product.

4.19.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.19.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.19.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

4.20 Rimage Producer Suite/Windows 2000 Upgrades

4.20.1 Description of COTS

The Rimage Producer Suite software supports fulfillment of orders for ECS data granules on CD and DVD media. The software communicates with the Rimage CD and DVD hardware drives to create CDs or DVDs with granule order data. Windows is the operating system for the Rimage and QA PCs.

4.20.2 Rationale for Upgrade

Hardware upgrades were planned for EDC and NSIDC. These upgrades required more current versions of the Rimage Producer Suite software. Additionally, the current baseline version of the software has reached end of bug fix support.

Version 6.0.35.1 of the Rimage Producer Suite was targeted as the software upgrade to support the Rimage hardware upgrade to support new CD media types. This software version required an upgrade to Windows 2000. An upgrade of Windows NT 4.0SP5 was planned because this version had reached end of support by Microsoft.

4.20.2.1 Vendor Support

Rimage identified that an upgrade was required to the Producer Suite software in order to support the planned hardware upgrades. The Rimage Producer Suite software required an operating system upgrade.

4.20.2.2 NCRs

There are no NCRs associated with this COTS product.

4.20.2.3 Features/Performance Upgrades

No specific performance or feature enhancements are targeted to be provided with this upgrade.

4.20.2.4 Cross Software Product Compatibility

An upgrade to Windows 2000 was required to support upgrade to Rimage Producer Suite, version 6.0.35.1. All Rimage PCs and QA PCs were upgraded to Windows 2000.

4.20.2.5 Operating System Compatibility

Targeted upgrade version is compatible with all operating systems versions for which the product will be baselined, which include:

- Windows

4.20.2.6 Hardware Product Compatibility

Identified hardware compatibility issues will be resolved by the Rimage Producer Suite software upgrade.

4.20.3 Operational Impact

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.20.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.20.5 Security Impact

No security impacts have been identified for this COTS product.

4.20.6 Licensing Impact

There are no licensing issues associated with this COTS product.

4.20.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.20.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.20.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

4.21 jConnect 5.5 EBF 11473 Upgrade

4.21.1 Description of COTS

The jConnect COTS product is a 100% pure implementation of the JavaSoft JDBC standard. It provides Java clients native database access. JConnect will enable Java Database Connectivity on Sun and SGI systems against Sybase Adaptive Server Enterprise 12.5.x.

Sybase periodically releases Emergency Bug Fixes (EBFs) for all of its applications. These are reviewed by the DDM Group when released. Those that include fixes for EMD critical issues are identified for upgrade.

4.21.2 Rationale for Upgrade

The current EBF 10349 for jConnect 5.5 is planned to be upgraded to a more recent EBF. The jConnect 5.5 EBF 11473 provides fixes to some performance problems that have been identified with earlier releases. Performance improvement is a goal for Synergy V and this EBF upgrade is expected to contribute to this goal.

4.21.2.1 Vendor Support

Sybase regularly releases EBF updates, which typically contain groups of bug fixes for the specific product. EBF 11473 addresses performance issues and has been reviewed and recommended for inclusion in Synergy V.

4.21.2.2 NCRs

No NCRs are outstanding for this COTS product.

4.21.2.3 Features/Performance Upgrades

Improved performance is expected with this upgrade.

4.21.2.4 Cross Software Product Compatibility

There are no cross software product compatibility issues with this upgrade. EBFs do not impact existing compatibilities with other Sybase products.

4.21.2.5 Operating System Compatibility

Product is certified by the vendor for Solaris 8 and IRIX 6.5.x.

4.21.2.6 Hardware Product Compatibility

There are no hardware compatibility issues associated with this upgrade.

4.21.3 Operational Impact

No operational impacts have been identified other than the installation downtime as identified in the PSR. COTS product is automounted, so impact is expected to be minimal.

4.21.4 Custom Code Impact

There are no direct custom code impacts. Regression testing with custom code, especially Synergy IV custom code, will verify there are no indirect impacts with the use of the EBF upgrade.

4.21.5 Security Impact

No security impacts have been identified for this COTS product.

4.21.6 Licensing Impact

No license keys are required for this COTS product. Sybase provides product as freeware.

4.21.7 External Drivers

No external drivers have been identified for this COTS product.

4.21.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.21.9 COTS Installation Sequence/Dependencies

No installation sequence or other dependencies have been identified with this COTS product.

4.22 ClearCase 2003.06

4.22.1 Description of COTS

ClearCase combines comprehensive software configuration management (SCM) — including version control, workspace management, process control and build management — with a uniquely transparent, non-intrusive approach. With ClearCase, development teams can accelerate development cycles, ensure the accuracy of releases, reliably build and patch previously shipped products, and organize an automated development process — all without changing their environment or their tools. IBM has recently acquired Rational Software, the original EMD vendor of the ClearCase tool.

4.22.2 Rationale for Upgrade

End of support for version 2002.05 is the primary driver for the ClearCase upgrade. Version 6.0, also known as version 2003.06 is compatible and certified for IRIX 6.5.17, as well as Solaris 8.

4.22.2.1 Vendor Support

ClearCase version 2002.05 will reach end of bug fix support as of 2/2004. However, the vendor has indicated that Level 1 Bug fixes will be addressed through 8/31/2004.

4.22.2.2 NCRs

There are no NCRs associated with this COTS product.

4.22.2.3 Features/Performance Upgrades

No specific performance or feature enhancements are targeted to be provided with this upgrade.

4.22.2.4 Cross Software Product Compatibility

There are no known software product compatibility issues related to this upgrade.

4.22.2.5 Operating System Compatibility

ClearCase 2003.06 (6.0) is certified for Solaris 8 and IRIX 6.5 through 6.5.19. It may be that the vendor will provide patches to support the IRIX OS that may be delivered before the ClearCase PSR delivery. In the delivery of version ClearCase 2002.05, patches became available before PSR delivery to support IRIX 6.5 through version 6.5.17 (the targeted IRIX upgrade version at the time). Patches to provide certified vendor support for the IRIX 6.5.2x version upgrade identified in this document may be available prior to delivery of the ClearCase PSR.

If ClearCase 2003.06 patches are not available for the identified IRIX 6.5.2x version upgrade release, a testing process will be included to verify that there are no impacts to using ClearCase 2003.06 with the identified IRIX 6.5.2x upgrade version. There have been previous occasions where the ClearCase version was not formally certified by the vendor for the specific 6.5.x baseline version. There have been no issues or impacts when this situation has occurred with earlier ClearCase deliveries. It is expected that this will continue to be a low impact compatibility issue.

4.22.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified that are associated with this COTS product.

4.22.3 Operational Impacts

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.22.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.22.5 Security Impact

No security impacts have been identified for this COTS product.

4.22.6 Licensing Impact

License keys are required for this COTS product for new installations, but existing installations will not need to update the existing license keys. Sufficient licenses for deployment have been identified. Procedures to obtain/install the license keys will be included with the PSR.

4.22.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.22.8 Other Impacts/Comments

No other impacts will be associated with this upgrade.

4.22.9 COTS Installation Sequence/Dependencies

There are no installation sequence or other dependency associated with this upgrade.

4.23 SANergy 3.2.1.49

4.23.1 Description of COTS

Tivoli SANergy is a software solution that enables shared data access at the speed of a storage area network, using fibre channel, SCSI, or SPARC Storage Array (SSA). It gives multiple computers the power to dynamically share files and data on storage area network (SAN) based storage, using standard networks and filesystems.

4.23.2 Rationale for Upgrade

Two NCRs have been logged against the current version of SANergy. Resolution of these NCR and deployment of a more stable version of SANergy are the primary drivers for this COTS upgrade. Currently, the SANergy daemon occasionally aborts abnormally.

NCR 38006 has been logged against the SANergy implementation problems exhibited when fusing SAN data. NCR 37836 has been logged on the issue of log file permissions.

It is expected that the SANergy upgrade will provide a more stable implementation and resolve the outstanding NCRs.

4.23.2.1 Vendor Support

The upgrade to the most recent version of SANergy is expected to resolve issues identified in NCR.

4.23.2.2 NCRs

Table 4-7 identifies the NCRs against the current SANergy version.

Table 4-7. NCRs Against SANergy 3.2.1.6/8

NCR	Description	State
ECSed 38006	SAN Data Fusing	A
ECSed 37033	Logging File Permissions	A

4.23.2.3 Features/Performance Upgrades

Upgrade is expected to provide a more stable SAN platform. Currently, the SANergy daemon occasionally aborts abnormally. The upgrade is targeted primarily to resolve this issue.

4.23.2.4 Cross Software Product Compatibility

SANergy is compatible with all software products on the hosts where it is currently baselined and implemented.

4.23.2.5 Operating System Compatibility

Targeted upgrade version is compatible with all operating system versions for which the product will be baselined, which include:

- IRIX 6.5.x (all 6.5 releases)
- Solaris 8

4.23.2.6 Hardware Product Compatibility

No hardware product compatibility issues have been identified that are associated with this COTS product.

4.23.3 Operational Impact

No operational impacts have been identified beyond installation downtime and impacts identified in the PSR.

4.23.4 Custom Code Impact

There are no identified custom code impacts associated with this COTS product.

4.23.5 Security Impact

No security impacts have been identified for this COTS product.

4.23.6 Licensing Impact

License keys are not required for this COTS product upgrade as current license keys will be sufficient. Sufficient licenses for deployment have been identified.

4.23.7 External Drivers

No external drivers have been identified for this COTS upgrade.

4.23.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

4.23.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

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5. Potential Software Upgrades

The COTS software upgrades in the previous section have been identified for upgrade within the next six months to a year. The schedule for these upgrades will be entered into Primavera Project Planner (P3) when the all resources that could impact schedule are available. There are however a number of other COTS software products that have been identified for possible upgrades in the future. It is not certain if these upgrades will be undertaken or can be completed in the time frame addressed by this document.

5.1 Remedy Web Access for Trouble Ticketing

Versions of Remedy starting with version 5.0, include Web access capabilities. When first delivered, this feature was separately priced, i.e., additional license fees were required, but recent versions include a mid-tier component that supports web-based applications.

The changes necessary to move Trouble Ticketing applications and screens to a Web-enabled format require a significant amount of effort. These changes may be included with the deployment of Remedy 5.1.2 discussed in section 4.3 Remedy ARS 5.1.2.

5.2 Java Development Kit (JDK) 1.4.1

The Java Runtime Environment (JRE) 1.4.1 has been PSRed. JRE is a subset of the Java Development Kit (JDK) 1.4.1. If Remedy Web Access enhancement is identified as an EMD Task, JDK 1.4.1 will need to be delivered also to provide needed functionality. It is expected that this product will be included with Remedy Web Access for Trouble Ticketing as a single PSR.

5.3 ACSLS 7.x

Automated Cartridge System Library Software (ACSLS) from StorageTek is a software package that runs the front-end for the STK Powderhorn and Wolfcreek tape silos. The current version, 6.1, has recently been identified by the vendor to reach end of support by 12/30/2004. A Task 101 upgrade will be planned and scheduled in P3 prior to this end of support date for the current baseline version. The most recent ACSLS version will be used for the upgrade. A review to identify any potential compatibility or other upgrade issues will be conducted as part of the planning process. None are currently expected.

5.4 MoveMail

The original delivery of Netscape Communicator utilized the MoveMail protocol. Over time the industry has standardized on the more recent POP3 and IMAP protocols. There is currently no active support for the MoveMail protocol. It is expected over time that the work-arounds utilized with the most recent delivery of Netscape Communicator 7.0 may not be sufficient. Therefore,

upgrade of the current MoveMail protocol to either POP3 or IMAP (or a combination of these protocols) may be planned and scheduled as a Task 101 activity. This upgrade is currently considered low priority.

5.5 PC Anti-Virus

With an increasing level of PC viruses, consideration is being given to providing PC Anti-Virus software for all production PCs as a security measure. This effort will require a procurement, although the cost is expected to be very low. Additionally, since this is a new COTS, this delivery is expected to require new EMD tasking.

5.6 Builder Xcessory

Builder Xcessory from ICS is utilized in custom code development. E-Pak is a companion product from the same vendor. The baseline versions for these products (5.8 / 3.0.4) have reached end of bug fix support. There are currently no issues with the custom code that utilizes this COTS product and no new custom code deliveries are planned which would include the packages developed with this software. An upgrade may be planned and scheduled under Task 101 if any of the previous circumstances change. Upgrade is currently considered a low priority.

5.7 Sybase Replication Server EBF

It is expected that an Emergency Bug Fix (EBF) will be required for Sybase Replication Server 12.5. Sybase releases EBFs periodically. When a critical fix is identified that is applicable for the EMD implementation, an EBF upgrade task is planned and scheduled.

5.8 Sybase Open Client EBF

It is expected that an Emergency Bug Fix (EBF) will be required for Sybase Open Client 12.0. Sybase releases EBFs periodically. When a critical fix is identified that is applicable for the EMD implementation, an EBF upgrade task is planned and scheduled. It is possible that an upgrade of Open Client to 12.5 or 12.5.1 would be performed if this upgrade was needed to resolve a significant issue or if Open Client 12.0 reaches end of support or end of life during 2004.

5.9 Apache Upgrade

An NCR (severity 2) has been submitted to upgrade Apache Web Server to version 1.3.29 or higher because of security issues with the current baseline version, 1.3.26. This issue is being reviewed by the security team. It is probable that an upgrade will be planned to resolve this issue. Impacts to Synergy IV must be reviewed, as Data Pool is the primary user of this freeware product and Synergy IV is in the late testing stages.

5.10 AMASS 5.4

An upgrade to AMASS 5.4 is expected to be initiated late in second quarter of 2004. A fix which has been requested from vendor is not planned for delivery with version 5.3.3, but is planned for delivery with version 5.4. Additionally, if an operating system release higher than IRIX 6.5.20 is needed, an upgrade to version 5.4 would be required.

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6. COTS Hardware Upgrades

This section identifies the planned COTS hardware additions and upgrade through July 2003. Hardware COTS upgrades are performed in accordance with the Work Instructions SE-1-019-1, which details the work required from design, through procurement to the receipt of the COTS product. Once this process is complete, a CCR is created for installation and submitted to the CCB for review in accordance with the CM-1-004-1. The COTS hardware upgrades are reviewed with the DAAC at the weekly EMD CCB before approval. If actions are required to complete the CCR, these actions are assigned to the DAAC and reviewed by the CCB.

A Maintenance Work Order (MWO) tracks individual hardware failures. Identification of operational problems, related to performance and functionality are tracked through the COTS software NCR process.

The COTS Hardware upgrade section is divided into 2 sections. The first section (Section 6) includes hardware upgrades that that been proposed and defined by current EMD Tasks. A full outline description of these activities is provided.

Section 7. Potential COTS Hardware Upgrades identifies potential hardware engineering tasks that have not yet been formally proposed or accepted, but are being considered by Hardware Engineering. A summary is provided for these potential activities that will be updated by the Deployment Monthly Patch Plan as they are defined and proposed to the Government until the next update of this document.

6.1 Sun Server Consolidation

6.1.1 Description of COTS

A consolidation has been planned to replace the 3000s or 4000s model Sun application server platforms with two new Sun V880 application server platforms. The two new Sun V880 replacements will consist of an Internal Server and an External Server. An Operator's Workstation, consisting of a Sun Blade will also be included in the Sun Consolidation.

6.1.2 Rationale for Upgrade

The existing Sun 3000 and 4000 hosts have reached or are near End of Service Life (EOSL). Maintenance for these hosts has become increasingly expensive. The most recent Sun hardware available, such as the Sun V880s, are able to support more subsystems and processing on a single host than the original 3000 and 4000 equipment would allow. Additionally, a reduced number of servers will reduce operational time to install, test and support.

6.1.2.1 Hardware/Software Product Compatibility

There are no hardware/software product compatibility issues with the Sun Consolidation. Solaris 8 is the OS version before and after the Sun Consolidation.

6.1.2.2 Equipment End-of-Life/End-of-Support

Equipment End of Service Life EOSL is the primary driver for Sun Server Consolidation.

6.1.2.3 Features/Performance Upgrades

The new V880 servers will be capable of providing high levels of performance for the consolidated servers. Functionality that previously had been required to be spread across several servers to provide sufficient performance can now be consolidated into a smaller number of hosts.

6.1.3 Software Impact (COTS/Custom)

The new V880 Servers and Operator's Workstation are compatible with Solaris 8, as are all the COTS software and custom code that will run on the new Consolidated Servers. Some additional patches have been delivered for the V880 hosts, as recommended by Sun, specifically for the Sun V880 hosts. These patches target bug fixes for the specific V880 hardware used in the Sun Consolidation. These patches have been included in the complete testing cycle. Extensive regression testing is planned for Sun Consolidation to verify and test custom code and COTS in their new configuration.

6.1.4 Network Impacts

The network impacts have been detailed in the Sun Consolidation Transition Plan (Document #840-TP-100).

6.1.5 DAAC Facility Impacts

A Sun Consolidation Transition Plan (Document #840-TP-100) has been provided to assist the DAACs through this transition. The Sun Consolidation Transition Plan provides guidelines and information for the DAAC to make this transition.

6.1.6 Transition Impacts

The Sun Consolidation Transition Plan (Document #840-TP-100) has been released to identify and mitigate risks with this transition.

6.1.7 External Drivers

There are no external drivers to this transition.

6.1.8 Other Impacts/Comments

There are no other impacts other than those identified in the Sun Consolidation Transition Plan.

6.1.9 COTS Installation Sequence/Dependencies

The Sun Consolidation Transition Plan identifies the COTS installation sequence dependencies.

6.1.10 Replacement Matrix

Table 6-1 identifies the hardware replacements that will be made in the Sun Consolidation. Some of the new machine names utilize the same name as the machines to be replaced in the Sun Consolidation. All machines identified in the Sun Consolidation column in Table 6-1 are new machines.

Table 6-1. Consolidation Server Replacement Matrix (1 of 2)

Sun Consolidation Servers/Operator's WS	Existing Servers Replaced
e0ins02 e0acs11 e0acs12	e0acs03 e0acs05 e0ins01 e0ins02 e0dis02 e0mss21 e0mss20
g0ins01 g0acs11 g0acs07	g0acs03 g0acs02 g0ins01 g0ins02 g0dis02 g0mss21 g0mss20
l0ins01 l0acs03 l0acs01	l0acs03 l0ins01 l0ins02 l0dis02 l0mss21 l0mss20

Table 6-1. Consolidation Server Replacement Matrix (2 of 2)

Sun Consolidation Servers/Operator's WS	Existing Servers Replaced
n0ins02	n0acs03
n0acs04	n0acs04
n0acs03	n0acs06
	n0ins01
	n0ins02
	n0dis02
	n0mss21
	n0mss20

6.2 Firewall Hardware Upgrades

6.2.1 Description of COTS

The EMD Firewall is deployed on IBM RS/6000 servers as a critical part of the EMD security solution. Memory and disk upgrades are planned for existing Firewall servers. An additional Firewall Server is added to GSFC Firewall implementation to support MODAPS throughput has been delivered to GSFC.

6.2.2 Rationale for Upgrade

The memory upgrades are provided to decrease use of swap space and therefore reduce performance impacts in high load situations. The disk upgrades will allow swap space to match memory and provide more space for log files. A new backplane will be added in order to support the addition of an 18.2 GB internal disk at all sites.

The second Firewall at GSFC is to reduce the significant impact of MODAPS traffic from the GSFC Firewall Server. Currently, MODAPS traffic across the Firewall is greater than the traffic of all other DAACs combined. This second GSFC Firewall will handle MODAPS traffic exclusively. The new firewall configuration has 4 1.4GHz CPUs and 2GB RAM with 2 36GB disks. This configuration will provide adequate bandwidth for MODAPS growth.

6.2.2.1 Hardware/Software Product Compatibility

There are no software compatibility issues with these upgrades. The same baseline COTS software versions will be used on all Firewall Servers.

6.2.2.2 Equipment End of Life/End of Support

There are no equipment end of life or end of support issues with this upgrade.

6.2.2.3 Features/Performance Upgrades

Better overall performance is expected with these hardware upgrades.

6.2.3 Software Impact (COTS/Custom)

There are no COTS or custom code software impacts related to these hardware upgrades.

6.2.4 Network Impacts

There are no network impacts to these hardware upgrades. The new GSFC MODAPS Firewall Server will be added to the Network configurations and baselines as part of the hardware delivery process.

6.2.5 DAAC Facility Impacts

There are no DAAC Facility impacts involved with this upgrade, other than accommodating the cabling and electrical requirements for the new GSFC Firewall Server.

6.2.6 Transition Impacts

This activity is not associated with or dependent on any transition.

6.2.7 External Drivers

There are no external drivers associated with these hardware upgrades.

6.2.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

6.2.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

6.2.10 Replacement Matrix

Tables 6-2 and 6-3 provide the replacement and upgrade information related to the planned SGI replacements.

Table 6-2. Memory Upgrade Matrix for Firewall Servers

Host	Baseline Memory Allocation	Upgrade/ Current Memory Allocation
e0fwi09	8 128K Sims	8 512K Sims
g0isi08	8 128K Sims	8 512K Sims
l0isi08	8 128K Sims	16 128K Sims *
n0fwi09	8 128K Sims	16 128K Sims *

* The 8 128K Sims removed at LPDAAC and GSFC will be shipped to LARC and NSIDC to be added to the current memory configuration at these sites.

Table 6-3. Disk Upgrades for Firewall Servers

Host	Baseline Disk Configuration	Upgrade/Current Disk Configuration
e0fwi09	2 – 9GB Internal Disks	2 – 9GB + 36GB Internal Disk
g0isi08	2 – 9GB Internal Disks	2 – 9GB + 36GB Internal Disk
l0isi08	2 – 9GB Internal Disks	2 – 9GB + 36GB Internal Disk
n0fwi09	2 – 9GB Internal Disks	2 – 9GB + 36GB Internal Disk

6.3 ESD 196 LP DAAC Archive Silo Upgrade

6.3.1 Description of COTS

STK T9940A drives are currently used in the silos at most sites to store data granules. The 60GB T9940A drives have a considerably lower capacity that the more recent 200 GB T9940B drives that have been provided for use in some silos.

6.3.2 Rationale for Upgrade

Due to increases in reprocessing and the desire to keep data longer than originally planned, the silos are filling quicker than the current requirements anticipated. To address this situation, an upgrade is planned for the current archive tape drives (STK T9940A) with higher density tape drives (STK T9940B drives) in Silo 2 at LP DAAC. ESD 196 covers only delivery to LP DAAC, but upgrades for other sites are being considered in future ESDs or EMD Tasks.

6.3.2.1 Hardware/Software Product Compatibility

The STK T9940A drives will be replaced on a one for one basis with STK T9940 B drive. The physical interface between the STK T9940A drive and its server e0drg12 is a SCSI interface. The STK T9940B drive does not support the SCSI interface but requires a fiber channel interface. The server for Silo 2 is SGI Origin 2000. This machine provides four port SCSI I/O

cards and single port FC cards. This four to one difference in I/O port to drive capacity will require an upgrade to e0drg12 or a change in the method the drive are connected to the server.

The new implementation will feature T9940B fibre channel drives connected via the STK model 3900 32-port SAN Fabric switch. The SAN Fabric configuration would allow accommodation of the increased FC I/O requirement configure all silos in AMASS on multiple hosts. By using a switch fabric a single I/O slot can drive multiple drives, and allows easier balancing of drive load with in the silo.

6.3.2.2 Equipment End-of-Life/End-of-Support

No end-of-life or end-of-support issues are applicable to this implementation.

6.3.2.3 Features/Performance Upgrades

Upgrade will support higher density tapes will provide the following performance and features:

- Reduce the need for additional tapes
- Provide better aggregate throughput
- Increased functionality with transition from SCSI to FC HBA
- Fabric expands host backplane

6.3.3 Software Impact (COTS/Custom)

There are no custom code impacts to this upgrade.

6.3.4 Network Impacts

No network impacts have been identified or are expected with this task.

6.3.5 DAAC Facility Impacts

In order to minimize DAAC facility impacts, the PSR will provide three (3) implementation options, which utilize DAAC available maintenance periods. The three options will provide flexibility for implementation.

Off-line Media Manager (stand-alone jukebox) is required while data is being migrated from 9940A media to T9940B drives.

6.3.6 Transition Impacts

The PSR for this upgrade will include a Transition Approach recommendation for the LP DAAC, which will include three upgrade options utilizing DAAC available maintenance periods.

6.3.7 External Drivers

No external drivers have been identified for this task.

6.3.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

6.3.9 COTS Installation Sequence/Dependencies

Installation of the AMASS Off-line Media Manager is required to assist with migration of data from the 9940A media to the T9940B drives. The Off-line Media Manager instructions were delivered with Engineering Technical Directive 03-008.

6.3.10 Replacement Matrix

There will be a one to one replacement of the T9940A drives in Silo 2 at LP DAAC with a T9940B drive. This is the only replacement currently planned.

6.4 MODAPS Upgrade

6.4.1 Description of COTS

The MODAPS upgrade will consist of an Origin 350 with eight 700 MHz CPUs, 16 GB memory, two 18 GB hard drives, HBAs and network cards.

6.4.2 Rationale for Upgrade

The current network cards use the CPU to process the network stack. This increases the load on the system since one CPU is dedicated to each network card. The new Tigon 3 network cards use 'TCP offload engine'. Some of the TCP stack is hosted on the card. This will reduce the load on the CPUs. The newer cards are PCIX, which run at 133 MHz, the older cards are 66 MHz so an increase in overall network performance should be realized.

Even though the number of CPUs was reduced from 12 to 8, the increased MHz and the reduced load of the network card should provide increased performance.

6.4.2.1 Hardware/Software Product Compatibility

The system will be loaded with IRIX 6.5.20 to support the new hardware.

6.4.2.2 Equipment End-of-Life/End-of-Support

No end-of-life or end-of-support issues are applicable to this implementation.

6.4.2.3 Features/Performance Upgrades

The IRIX 6.5.20 Operating System has enhancements that will allow the network cards to operate more efficiently.

6.4.3 Software Impact (COTS/Custom)

There are no custom code impacts to this upgrade.

6.4.4 Network Impacts

The faster clock speed of the new PCIX Tigon 3 cards at the reduced CPU load should increase the network performance.

6.4.5 DAAC Facility Impacts

No DAAC Facility Impacts have been identified or are expected with this task.

6.4.6 Transition Impacts

The transition from IRIX 6.5.14 to IRIX 6.5.20 has been tested. No issues were discovered during the test.

6.4.7 External Drivers

No external drivers have been identified for this task.

6.4.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

6.4.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

6.4.10 Replacement Matrix

Table 6-4 shows the replacement matrix for the MODAPS Upgrade.

Table 6-4. MODAPS Upgrade Replacement Matrix

Existing System	New System
Origin 2000 with 12x300MHzCPUs, 10 GB memory	Origin 350 with 8 x 700 MHz CPUs, 16 GB memory

* All RAID will be relocated from the Origin 2000 to the Origin 350.

6.5 Data Pool Hardware Upgrade

6.5.1 Description of COTS

Additional RAID and CPUs are planned for Data Pool to support Synergy IV capabilities for Data Pool.

6.5.2 Rationale for Upgrade

Enhancements have been planned for Synergy IV. The overall scope of the SAN solution for Data Pool will increase for future growth. The capacity SAN upgrade will provide 22TB of additional RAID or LP DAAC and GES DAAC, 20TB of RAID for LARC and 2TB of RAID for NSIDC at the beginning of CY 2004.

The xxdps01 hosts at GES DAAC and PVC have been upgraded with 4 CPUs and 4GB of memory to enhance the processing capabilities of the Data Pool Servers. The remaining DAACs will receive the same upgrade of 4 CPUs with 4GB of memory to increase the processing capacity of the Data Pool Servers. The RAID and CPU upgrades will provide support for the planned Synergy IV requirements.

6.5.2.1 Hardware/Software Product Compatibility

There are no hardware/software product compatibilities with this upgrade. The same baseline COTS software versions will be used on the SAN/Data Pool.

6.5.2.2 Equipment End-of-Life/End-of-Support

No end-of-life or end-of-support issues are applicable to this implementation.

6.5.2.3 Features/Performance Upgrades

The planned upgrades will support performance with future planned Synergy capabilities.

6.5.3 Software Impact (COTS/Custom)

There are no custom code impacts to this upgrade.

6.5.4 Network Impacts

There are no network impacts associated with this upgrade.

6.5.5 DAAC Facility Impacts

No DAAC Facility Impacts have been identified or are expected with this task.

6.5.6 Transition Impacts

There are no transition impacts associated with this upgrade.

6.5.7 External Drivers

No external drivers have been identified for this task.

6.5.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

6.5.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

6.5.10 Replacement Matrix

Additional RAID and CPUs are being provided. There are no replacements involved in this activity.

6.6 Fibre Channel RAID Hardware Upgrade

6.6.1 Description of COTS

An additional RAID implementation, consisting of one rack with 2 shelves of 36 GB disks and one shelf of 73 GB disks, will be added to GES DAAC SDSVR database. The additional RAID yields 14x32 GB mirrors for SDSVR database growth with the 14x73 shelf allocated for Sybase dump disks. This COTS upgrade was purchased using two funding sources. The RAID rack and one shelf of 36 GB disks were purchased with ESD 189 funds as SCSI replacement RAID but the RAID will be applied to Sybase database needs because the priority of database growth is higher and more urgent than replacement of SCSI RAID. The balance of the RAID implementation is proposed to be funded through EMD SEP 02.

6.6.2 Rationale for Upgrade

The current rate of growth exceeds the planned growth rate. Without additional SDSVR database capacity the SDSVR database will be full by early 2004. This upgrade will provide adequate SDSVR database capacity through 2004.

6.6.2.1 Hardware/Software Product Compatibility

There are no software compatibility issues with these upgrades. The same baseline COTS software versions will be used on database.

6.6.2.2 Equipment End-of-Life/End-of-Support

No end-of-life or end-of-support issues are applicable to this implementation.

6.6.2.3 Features/Performance Upgrades

The planned upgrades will support performance with future planned Synergy capabilities.

6.6.3 Software Impact (COTS/Custom)

There are no custom code impacts to this upgrade.

6.6.4 Network Impacts

There are no network impacts associated with this upgrade.

6.6.5 DAAC Facility Impacts

Additional floor space and power outlets are required for this upgrade. Location and power source have already been identified and agreed upon by the GES DAAC.

6.6.6 Transition Impacts

There are no transition impacts associated with this upgrade.

6.6.7 External Drivers

No external drivers have been identified for this task.

6.6.8 Other Impacts/Comments

No other impacts have been identified for this COTS product.

6.6.9 COTS Installation Sequence/Dependencies

No installation sequence dependencies or other COTS product dependencies have been identified for this COTS product.

6.6.10 Replacement Matrix

Table 6-5 shows the Fibre Channel RAID upgrade matrix.

Table 6-5. Fibre Channel RAID Upgrade Matrix

	Before Upgrade	After Upgrade
SDSVR Database	480 GB	928 GB
Sybase Dump	584 GB	1402 GB

7. Potential COTS Hardware Upgrades

Hardware Engineering is reviewing the following COTS Hardware upgrades for potential proposal to the Government. Since these are in the early stages of definition, proposal and /or acceptance, only a summary of the potential task is provided. Updates and further details related to these activities will be provided in the Deployment Monthly Patch Updates, or in an interim release of this document.

7.1 Archive Silo Upgrade

A task for a similar upgrade of T9940A drives to T9940B drives at GSFC, LARC and NSIDC is expected. This task will be similar to the upgrade described above in section 6.3 ESD 196 LP DAAC Archive Silo Upgrade.

7.2 Sun Consolidation Phase 2

The first Sun Consolidation effort consolidated and replaced Sun Servers at all sites. A second phase of Sun Consolidation targeting workstations and infrastructure servers that are reaching End of Service Life (EOSL) is being developed for proposal.

7.3 Catalyst 6000 Replacement

When CISCO originally released the Catalyst series of switches, the 6000 series was selected for use within ECS. The vendor also had released the Catalyst 6500 series. CISCO has recently decided to continue hardware support only for the Catalyst 6500 series. Although the CISCO Catalyst 6000 switches will not reach end of hardware support until May 2007, replacement of the Catalyst 6000 switches is being reviewed from the perspective of assuring continuous and complete hardware and software support for this critical function.

7.4 Additional GIG-E Capacity at GSFC

Currently there is only one available GigE interface available in the Catalyst 6000 Ethernet switch. As servers are added, the need for additional GigE ports will grow.

There are three possible solutions:

1. Using MRTG analyze currently attached GigE servers to determine if any can be moved to a FastEthernet port. This is the method now used to free up GigE ports.
2. Replace an 8-port GigE module with a 16-port GigE module. This will require an upgrade to the CatOS in the Catalyst 6000 Ethernet switch.
3. An additional 8-port GigE module. This will require replacing the current 6-slot Catalyst chassis with a 9-slot chassis.

It is expected that the pros and cons of these alternatives will be examined and proposed as an EMD Task.

7.5 SAN Upgrades

An evaluation is in progress for an alternative SAN software environment. If the SAN Pilot evaluation can demonstrate that the ADIC StorNext file system is mature and meets EMD requirements, the StorNext client and server software will replace the QFS and SANergy software as the EMD SAN solution.

Appendix A. Weekly CUT Matrix Example

Table A-1. Weekly CUT Matrix Example (1 of 7)

Product Name	B/Lver.	Upgrade Version	Upgrade Rationale	NCRs	Dev. Planning	Turnover to Test Date *	Turnover to M&O date *	PSR Date *	COTS POC	Status as of 11/12/2003 (unless otherwise noted)
Portus bug fix	5.05	Aproxy 5.08+	Reduce unnecessary logging	None	Identified as critical	CCR Submitted	PVC/VATC Testing Completed	CCR Approved for Delivery	Henry Baez	11/05/2003: Installation completed in PVC/VATC week of 10/20/03. Testing is in progress.
Portus bug fix	5.05	Smwrap 5.09	Bug Fix identified as critical	None	Identified as critical	CCR Submitted	PVC/VATC Testing Completed	CCR Approved for Delivery	Henry Baez	11/05/2003: CCR submitted and approved for installation and testing in PVC/VATC. Installation completed. Pending testing.
SANergy	3.2.1.8 (Sun)/ 3.2.16 (SGI)	3.2.1.49	Addresses fusing problem with SAN	38006	7/10/03	11/6/03	12/17/03	1/13/03	Rob Cole	CCR 03-0739 approved to install in PVC.
Remedy Replacement of XRP-II for ILM	XRP-II 3.1.3	Remedy 4.5.2 w/Admin patch 1160 & User Tool patch 1233	New version necessary for Solaris 8	29 NCRs	11/11/02	6/18/03	12/4/03	12/16/03	Ben Floyd/Trang Tran	Re-testing and clarifying/correcting test procedures now that the intersite data exchange problem has been resolved. Acceptance testing is expected to begin 11/10/03.

Table A-1. Weekly CUT Matrix Example (2 of 7)

Product Name	B/Lver.	Upgrade Version	Upgrade Rationale	NCRs	Dev. Planning	Turnover to Test Date *	Turnover to M&O date *	PSR Date *	COTS POC	Status as of 11/12/2003 (unless otherwise noted)
Legato Networker	6.0.2 (UNIX)/6.1.2 PCs/6.1.3 Linux	7.10	EOL expected for current version/Support for higher IRIX patch versions	None	7/21/02	TBD	TBD	TBD	Jai Howard	GA release of 7.1 not available for download. No definite date, but expected to be available "soon".
Forcheck	12.84	13.3.11	End of Support on 12/31/2003	None	7/8/03	10/16/03	10/29/03	11/6/03	Natisha Greenway	PSR completed on 11/06/03.
Sybase ASE Upgrade	12.0 (Sun)/ 12.5 (Sun)/ 12.5(SGI)	12.5.1 & latest EBF for 12.0 on xxspsxx	A security issue has been identified, which will be resolved with delivery of identified EBFs. Other bug fixes will also be included.	36169	11/17/03	TBD	TBD	TBD	Carol Lindsey	CCR 03-0738 approved to install in 12.5.1 in IDG Cell on miami and shelby.P84
COTS below to be PSRed before Synergy IV delivery										
Tomcat for Solaris	3.2.3	4.1.24	Capabilities needed for Synergy	None	5/15/03	10/9/03	11/12/03	11/25/03	Danny Huang	Functionality Lab testing in progress. Several custom code issues identified and updates to COTS and custom code being made.

Table A-1. Weekly CUT Matrix Example (3 of 7)

Product Name	B/Lver.	Upgrade Version	Upgrade Rationale	NCRs	Dev. Planning	Turnover to Test Date *	Turnover to M&O date *	PSR Date *	COTS POC	Status as of 11/12/2003 (unless otherwise noted)
Portus Patch Upgrade for Firewall Server	4.02	FTP Proxy 5.09	Capability need by DP provided in patch.	None	9/29/03	CCR Submitted	PVC/VATC Testing Completed	CCR Approved for Delivery	Henry Baez	11/05/2003: FTP Proxy 5.09 has been installed in VATC and PVC. Awaiting functional and Synergy IV testing.
iPlanet Web Server	6.00	Sun ONE Web Server 6SP	End of support	None	10/1/03	10/9/03	1/19/04	2/5/04	Jai Howard	Installed in VATC and PVC, but formal testing has not yet begun. Expected to start mid-November.
jConnect	5.5	5.5 EBF 11473	Includes performance features needed for Synergy IV	None	9/29/03	TBD	TBD	TBD	Carol Lindsey/Sally Jew	10/29/2003: Upgrade to most recent EBF 11473 completed. Awaiting testing.
End of Synergy IV COTS										
Begin EMS Task 101 COTS Upgrades										
ClearCase	4.1	5.0 (2002.05) w/ patches 18 and 19	End-of-Support 11/01/2002. Support for IRIX 6.5.14/6.5.17	None				PSR completed 04/15/2003	Jon Velapoldi	10/29/2003: Hardware upgrade has been proposed to mitigate build risks of builds not being able to be provided for up to 2 weeks (worst case scenario). Proposal being reviewed by Hardware Engineering.
AMASS	5.3.1	5.3.3	NCRs	37033 37215 37690	TBD	TBD	TBD	TBD	Brad Koenig	09/10/2003: Targeting upgrade to version 5.3.3, scheduled for GA delivery at the end of October.

Table A-1. Weekly CUT Matrix Example (4 of 7)

Product Name	B/Lver.	Upgrade Version	Upgrade Rationale	NCRs	Dev. Planning	Turnover to Test Date *	Turnover to M&O date *	PSR Date *	COTS POC	Status as of 11/12/2003 (unless otherwise noted)
Asynchronous Personality Daemon (APD)	2.3	2.6	At end of Support/Delivery & test with AMASS		See AMASS Schedule Above	See AMASS Schedule Above	See AMASS Schedule Above	See AMASS Schedule Above	Brad Koenig	10/29/2003: This upgrade is planned to be bundled, tested, tracked and scheduled with the AMASS 5.3.3 upgrade.
Remedy ARS	4.5.2	5.1.2	New Features provided beneficial for ILM/ End of Support for 4.5.2 expected by fall 2003/User Tool at EOL - vendor future support for Web Tool only.	35402	12/16/03	TBD	TBD	TBD	Ben Floyd	Upgrade planning has been scheduled. Version 5.1.2 will be utilized if more recent version has not been released when upgrade is initiated.
Remedy User for PC	4.5.2	4.5.2	NCR		See Remedy ARS schedule above	See Remedy ARS schedule above	See Remedy ARS schedule above		Ben Floyd	10/08/2003: Upgrade will be bundled with Remedy ARS upgrade. Refer to information on this upgrade.
IBM AIX Upgrade for Firewall Server	4.3.3 ML10	5.1	End of Support for AIX 4.3.3 ends 12/31/2003	None	11/14/03	TBD	TBD	TBD	Henry Baez	Planning documents presented 11/11/03.
Portus Upgrade for Firewall Server	5.05	5.09	Version upgrade required for AIX 5.x	None	Same as AIX 5.1	Same as AIX 5.1	Same as AIX 5.1	Same as AIX 5.1	Henry Baez	Refer to AIX 5.1 schedule above.

Table A-1. Weekly CUT Matrix Example (5 of 7)

Product Name	B/Lver.	Upgrade Version	Upgrade Rationale	NCRs	Dev. Planning	Turnover to Test Date *	Turnover to M&O date *	PSR Date *	COTS POC	Status as of 11/12/2003 (unless otherwise noted)
eBorder Upgrade for AIX 5.1	4.0	4.2.1	Version upgrade required for AIX 5.x	None	Same as AIX 5.1	Same as AIX 5.1	Same as AIX 5.1	Same as AIX 5.1	Henry Baez	Refer to AIX 5.1 schedule above.
WU FTP	2.6.2	TBD	WU-FTP source code will be revised for checksum extension to resolve compression problems under SAN.	None					Alex Schuster	Test and delivery approach being discussed.
Possible Future Upgrades										
IRIX	6.5.17	6.5.2x	Continued guaranteed bug fix support	None	1/23/04	TBD	TBD	TBD	Alex Schuster	10/15/2003: Guaranteed bug fix support has ended for IRIX 6.5.17m.
Solaris 8 Patches	last delivered 6/03	Most recently available bundle when task starts	Patches need update every 6 months to year for security and other issues.	None	TBD	TBD	TBD	TBD	Alex Schuster	07/30/2003: Schedule should target period when patches can be identified, installed and tested without impact to other major activities.
Remedy Web Access	N/A	TBD	NCR	33576	TBD	TBD	TBD	TBD	Architect's Office	10/22/2003: To be reviewed. May be proposed a EMD Task.
PC Anti-virus Software	N/A	TBD	Security issues		TBD	TBD	TBD	TBD	Infrastructure	10/22/2003: To be reviewed. May be proposed a EMD Task.

Table A-1. Weekly CUT Matrix Example (6 of 7)

Product Name	B/Lver.	Upgrade Version	Upgrade Rationale	NCRs	Dev. Planning	Turnover to Test Date *	Turnover to M&O date *	PSR Date *	COTS POC	Status as of 11/12/2003 (unless otherwise noted)
IDL	5.5	6.0	Version 5.5 is at end of bug fix support	None	TBD	TBD	TBD	TBD	Alex Schuster	07/09/2003: Vendor has identified that baseline HDF version 4.1r5 and 5.x (read & query) will be supported by the new version (6).
Sybase Replication Server	12.5 EBF 10493	12.5 EBF 11480	EBF has fixes that will mitigate potential risk	None	TBD	TBD	TBD	TBD	Carol Lindsey	10/01/2003: DDM has reviewed EBF 11480 and identified that the EBF includes fixes that would include significant fixes to the EMD Rep. Server implementation.
Builder Xcessory/Epak	5.0.8/ 3.0.4	6.1.1/3.06	End of Support	None	TBD	TBD	TBD	TBD	Alex Schuster	10/15/2003: Upgrade not planned currently.
SQS	3.2.4.9	4.x	End of Support approx. 6/04	None	TBD	TBD	TBD	TBD	Robert Hartranft	10/15/2003: Decision on upgrade pending release of new version.
ACSLS	6.1	7.0	Bug fix support will end 07/04	None	TBD	TBD	TBD	TBD	Darryl Washington	7/16/2003: End of support for current baselined version identified as 7/04.
ClearCase	2002	TBD	End of support on 8/04	None	TBD	TBD	TBD	TBD	Jon Velapoldi	07/09/2003: Vendor has extended support for version 2002.05 until 8/2003, but only severity 1 issues will be patched. All bug fix support had been previously due to expire on 2/2004.
OpenClient	12.0	12.5.x	End of Support estimated for 8/2004	None	TBD	TBD	TBD	TBD	Carol Lindsey	10/15/2003: Upgrade not planned currently.
Autosys	3.5	4.5	End of support announced 12/30/2004	None	TBD	TBD	TBD	TBD	TBD	End of support for version 6.1 identified by vendor as 12/30/2004.

Table A-1. Weekly CUT Matrix Example (7 of 7)

Product Name	B/Lvr.	Upgrade Version	Upgrade Rationale	NCRs	Dev. Planning	Turnover to Test Date *	Turnover to M&O date *	PSR Date *	COTS POC	Status as of 11/12/2003 (unless otherwise noted)
IMSL C and FORTRAN Numeric Libraries	3.01 4.1	5.0	End of bug fix support	None	TBD	TBD	TBD	TBD	TBD	Upgrade not planned. DAACs phasing out product. Eventual removal from baseline expected.
ACSLS	6.1	7.x	End of support as of 12/30/2004	None	TBD	TBD	TBD	TBD	TBD	ACSLS 7.0 released 9/22/03 and end of support for versions 6.1 and 6.1.1 announced as of 12/30/2004.
Linux	7.x	Commercial Version	Red Hat is dropping support of freeware versions.	None	TBD	TBD	TBD	TBD	TBD	Red Hat is dropping support for freeware versions after version 9. Procurement required for commercial version. Byron Peters working issue.

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Appendix B. COTS Compatibility Matrix

Table B-1 is a sample extract[2] from the COTS Compatibility Matrix that tracks COTS product version availability, end of life/end of support (EOL/EOS) status and other compatibility issues for all ECS COTS products and freeware. The end of life/end of support date provided is the earliest date that some support levels may be impacted for the product version. This may be end of life or end of support. Products with an EOL/EOS date of 12/12/2012 are products whose EOL/EOL dates are not known. It should be noted that most EOL/EOS dates are estimated from most recent releases and the vendor's published End of Life or Obsolescence Policy.

Table B-1. Future Software Upgrades Availability (1 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
a2ps	4.12	OPS	Freeware				
				a2ps	4.13b	Current	12/12/12
				a2ps	4.xx	TBD	12/12/12
Acrobat Reader for PC	5.0.5	OPS	Freeware				
				Acrobat Reader for PC	5.0.5	Current	1/1/04
				Acrobat Reader for PC	5.1	Current	1/1/05
				Acrobat Reader for PC	6	Current	1/1/06
				Acrobat Reader for PC	7	03/01/2005	3/1/07
Acrobat Reader for SGI	4.05	OPS	Freeware				
				Acrobat Reader for SGI	4.05	Current	1/1/04
				Acrobat Reader for SGI	5.0.5	IRIX not listed	1/1/05
				Acrobat Reader for SGI	6	IRIX not listed	n/a
				Acrobat Reader for SGI	7	IRIX not listed	n/a

[2] The COTS Software Compatibility Matrix is maintained in Microsoft Access. A Microsoft Excel extract was made from the database and imported into Word so that the Report could be electronically inserted into this document.

Table B-1. Future Software Upgrades Availability (2 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
Acrobat Reader for Solaris	4.05	OPS	Freeware				
				Acrobat Reader for Solaris	4.05	Current	6/1/04
				Acrobat Reader for Solaris	5.1	Current	6/1/04
				Acrobat Reader for Solaris	6	Current	1/1/06
				Acrobat Reader for Solaris	7	03/01/2005	3/1/07
ACSLS	6.1.0	OPS	COTS				
				ACSLS	6.1 PUT0203	Current	12/30/04
				ACSLS	6.1.1	Current	12/30/04
				ACSLS	7	Current	2/22/05
				ACSLS	7.1	02/22/2004	8/22/06
				ACSLS	8	08/01/2004	1/22/07
				ACSLS	8.1	02/01/2005	8/1/07
AMASS	5.3.1	OPS	COTS				
				AMASS	5.3.1	Current	2/1/04
				AMASS	5.3.3	10/31/03 est. for beta	10/1/04
				AMASS	5.4	06/30/2004	12/31/05
				AMASS	5.4.1	12/31/2004	6/30/06
				AMASS	5.5	6/30/05	12/31/06
Anlpassword	3	OPS	Freeware				
				Anlpassword	3	Current	12/12/12

Table B-1. Future Software Upgrades Availability (3 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
Apache Web Server	1.3.26	OPS	Freeware				
				Apache Web Server	1.3.26	Current	12/12/12
				Apache Web Server	1.3.29	Current	12/12/12
				Apache Web Server	2.0.48	Current	12/12/12
AutoSys Remote Agent for SGI	3.5	OPS	COTS				
				AutoSys Remote Agent for SGI	3.5	Current	12/12/12
				AutoSys Remote Agent for SGI	4	3.5 only for SGI Client	1/1/05
				AutoSys Remote Agent for SGI	4.5	3.5 only for SGI Client	8/1/07
				AutoSys Remote Agent for SGI	5	No Announced Availability Date	8/1/09
AutoSys Remote Agent for Sun	3.5	OPS	COTS				
				AutoSys Remote Agent for Sun	3.5	Current	5/1/04
				AutoSys Remote Agent for Sun	4	Current	1/1/05
				AutoSys Remote Agent for Sun	4.5	Current	8/1/07
				AutoSys Remote Agent for Sun	5	No Announced Availability Date	8/1/09
AutoSys Server	3.5	OPS	COTS				
				AutoSys Server	3.5 SP03	Current	5/1/04
				AutoSys Server	3.5 with patches for ASE 12.0	Current	5/1/04
				AutoSys Server	4	Current	1/1/05
				AutoSys Server	4.5	Current	1/1/06

Table B-1. Future Software Upgrades Availability (4 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
				AutoSys Server	5	No Announced Availability Date	6/1/07
AutoSys Xpert	3.5	OPS	COTS				
				AutoSys Xpert	3.5	Current	5/1/04
				AutoSys Xpert	4	Current	1/1/05
				AutoSys Xpert	4.5	Beta	6/1/07
				AutoSys Xpert	5	No Announced Availability Date	1/1/09
ClearCase	2002.05	OPS	COTS				
				ClearCase	5.0 (2002.05)	Current	2/28/04
				ClearCase	6.0 (2003.06)	Current	6/1/05
				ClearCase	7	08/01/2004	6/1/06
				ClearCase	8	08/01/2005	6/1/07
Crack	5.0a	OPS	Freeware				
				Crack	5.0a	Current	12/12/12
DDTS	4.7	OPS	COTS				
				DDTS	4.10 ?	06/2005	7/1/07
				DDTS	4.11 ?	06/2006	7/1/08
				DDTS	4.7	Current	7/1/04
				DDTS	4.8	07/01/2003	7/1/05
				DDTS	4.9 ?	07/01/2004	7/1/06

Table B-1. Future Software Upgrades Availability (5 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
e-Border Enterprise Server	4	OPS	COTS				
				Permeo Application Security Platform	4.02	Current	12/12/12
				Permeo Application Security Platform	4.2	Current	12/12/12
e-Border SGI Driver (Client)	3.05	OPS	COTS				
				Permeo e-Border SGI Driver (Client)	3.05	Current	12/12/12
FIND_DDOS	4.2	OPS	Freeware				
				FIND_DDOS	4.2	Current	12/12/12
FLEXlm	8.0d	OPS	COTS				
				FLEXlm	8.0d	Current	12/12/12
				FLEXlm	9.2	Current	12/12/12
Forcheck	12.84	OPS	COTS				
				Forcheck	13.3.11	Current	12/12/12
				Forcheck	13.x	TBD	12/12/12
				Forcheck	TBD	Current	12/12/12
Forte Compilers	6.2	OPS	COTS				
				Forte Compilers	6.2	Current	12/12/12
				Sun ONE Studio 7 Enterprise Edition	7	Current	12/12/12
Ghostscript	6.5.2	OPS	Freeware				
				Ghostscript	6.52	Current	12/12/12
				Ghostscript	7.07	Current	12/12/12
GhostView	1.5	OPS	Freeware				
				GhostView	1.5	Current	12/12/12

Table B-1. Future Software Upgrades Availability (6 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
HDF Libraries (series 4)	4.1r5	OPS	Freeware				
				HDF Libraries (4 series)	4.1r5	Current	12/12/12
HDF Libraries (series 5)	5-1.2.2	OPS	Freeware				
				HDF Libraries (5 series)	5-1.2.2	Current	12/12/12
				HDF Libraries (5 series)	5-1.6.0	Current	12/12/12
IBM AIX for Firewall	4.3.3 ML10	OPS	COTS				
				IBM AIX for Firewall	4.3.3 ML10	Current	12/31/03
				IBM AIX for Firewall	5.1 ML4	Current	12/12/12
				IBM AIX for Firewall	5.2	Current	12/12/12
IDL for SGI	5.5	OPS	COTS				
				IDL for UNIX	5.5	Current	11/1/02
				IDL for UNIX	5.6	Current	6/1/03
				IDL for UNIX	6	08/01/2003 (est.)	6/1/04
				IDL for UNIX	6.1	08/01/2004 (est.)	6/1/05
IMSL CNL for DAAC IRIX	3.01	OPS	COTS				
				IMSL CNL for IRIX (DAAC)	3.01	Current	12/1/02
				IMSL CNL for IRIX (DAAC)	5	Current	12/12/12
				IMSL CNL for IRIX (DAAC)	6	01/01/2004	12/12/12

Table B-1. Future Software Upgrades Availability (7 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
IMSL F90 for DAAC IRIX	4.01	OPS	COTS				
				IMSL F90 for IRIX (DAAC)	4.01	Current	2/6/03
				IMSL F90 for IRIX (DAAC)	5	Current	12/12/12
				IMSL F90 for IRIX (DAAC)	5.x	01/01/2004	12/12/12
Interdrive	7.1	OPS	COTS				
				Interdrive	7.1	Current	12/12/12
				Interdrive	x.x	TBD	12/12/12
iPlanet Web Server	6.0 Enterprise Edition	OPS	COTS				
				iPlanet Web Server, Enterprise Edition	6	Current	8/1/02
				iPlanet Web Server (Sun ONE), Enterprise Edition	6.0 SP6	Current	12/12/12
IRIX for DAACs	6.5.17m	OPS	COTS				
				IRIX	6.5.17m	Current	7/20/03
				IRIX	6.5.18m	Current	11/20/03
				IRIX	6.5.19m	Current	2/2/04
				IRIX	6.5.20m	Current	5/7/04
				IRIX	6.5.21m	Current	8/11/04
				IRIX	6.5.22m	Current	11/11/04
				IRIX	6.5.23m	02/11/2004	2/11/05
				IRIX	6.5.24m	05/11/2004	5/7/05
				IRIX	6.5.25m	08/7/2004	8/11/05
				IRIX	6.5.26m	11/11/2004	11/11/05

Table B-1. Future Software Upgrades Availability (8 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
				IRIX	7	8/2008 at the earliest	12/12/12
JAF for SGI	1.0.1	OPS	Freeware				
				JAF for SGI	1.0.1	Current	12/12/12
JAF for Sun	1.0.1	OPS	Freeware				
				JAF for Solaris	1.0.1	Current	12/12/12
				JAF for Solaris	1.0.2	Current	12/12/12
JavaMail API for SGI	1.2	OPS	Freeware				
				JavaMail for SGI	1.2	Current	12/12/12
JavaMail API for Solaris	1.2	OPS	Freeware				
				JavaMail for Solaris	1.2	Current	12/12/12
				JavaMail for Solaris	1.3	Current	12/12/12
				JavaMail for Solaris	1.3.1	Current	12/12/12
JAXP for SGI	1.0.1	OPS	Freeware				
				JAXP for SGI	1.0.1	Current	12/12/12
				JAXP for SGI	1.1	Current	12/12/12
JAXP for Solaris	1.0.1	OPS	Freeware				
				JAXP for Solaris	1.0.1	Current	12/12/12
				JAXP for Solaris (Java Web Services Developer Pack)	1.2.3 (in WSDP 1.2)	Current	12/12/12
jConnect	5.5 EBF10349	OPS	Freeware				
				jConnect	5.5 EBF10349	Current	12/12/12

Table B-1. Future Software Upgrades Availability (9 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
JDBC API	2	OPS	Freeware				
				JDBC API for Solaris	2	Current	12/12/12
				JDBC API for Solaris	3	Current	12/12/12
JDOM for SGI	1.0beta7 & 8	OPS	Freeware				
				JDOM for SGI	1.0beta8	Current	12/12/12
				JDOM for SGI	1.0beta9	Current	12/12/12
JDOM for Solaris	1.0beta7 & 8	OPS	Freeware				
				JDOM for Solaris	1.0beta8	Current	12/12/12
				JDOM for Solaris	1.0beta9	Current	12/12/12
JetDirect for Sun	E.10.18	OPS	Freeware				
				JetDirect for Solaris	E.10.18	Current	12/12/12
				JetDirect for Solaris	E.10.34	Current	12/12/12
JNI C Controller for Fiber Channel Host Bus Adapter	4	OPS	COTS				
				JNI C Controller for Fiber Channel	4	Current	12/12/12
				JNI C Controller for Fiber Channel	TBD	TBD	12/12/12
JRE for Solaris	1.3.1_01	OPS	Freeware				
				JRE & Java SDK for Solaris	1.5	Announcement	12/12/12
Legato Networker Client for PC	6.1.2	OPS	COTS				
				Legato Networker Client for PC	6.1.2	Current	6/1/04
				Legato Networker Client for Linux	6.1.3	Current	1/1/05
				Legato Networker Client for PC	7.1	Current	12/12/12

Table B-1. Future Software Upgrades Availability (10 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
Legato Networker Client for UNIX	6.0.2	OPS	COTS				
				Legato Networker Client for UNIX	6.0.2	Current	1/1/04
				Legato Networker Client for UNIX	7.1	Current	6/1/05
				Legato Networker Client for UNIX	7.2	TBD	12/12/12
Legato Networker Server for UNIX	6.0.2	OPS	COTS				
				Legato Networker Server for UNIX	6.0.2	Current	1/1/04
				Legato Networker Server for UNIX	7.1	Current	6/1/05
				Legato Networker Server for UNIX	7.2	TBD	12/12/12
Linux for Intel Science Processor	7.3	OPS	COTS				
				Linux for MODIS Direct Broadcast	7.3	Current	12/12/12
				Linux OS	9	Current	12/12/12
Linux for Security Workstations	7.1.3	OPS	COTS				
				Linux for Security Workstations	7.1.3	Current	12/12/12
				Linux for Security Workstations	7.3	Current	12/12/12
				Linux OS	9	Current	12/12/12
Microsoft Office Professional	Office97	OPS	COTS				
				Microsoft Office Professional	Office 2000	Current	6/30/04
				Microsoft Office Professional	Office 2003	Current	12/12/12
				Microsoft Office Professional	Office 97	Current	2/28/02
				Microsoft Office Professional	Office XP	Current	6/30/06

Table B-1. Future Software Upgrades Availability (11 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
MM	1.1.3	OPS	Freeware				
				MM	1.1.3	Current	12/12/12
				MM	1.3.0	Current	12/12/12
mod_ssl	2.8.9-1.3.26	OPS	Freeware				
				mod_ssl	2.8.15 - 1.3.28	Current	12/12/12
				mod_ssl	2.8.9-1.3.26	Current	12/12/12
NCDware	5.1.140	OPS	COTS				
				NCDWare	5.1.140	Current	2/1/02
				NCD software for new HW	New HW/SW	Current	12/12/12
Netscape Communicator for Solaris	7	OPS	COTS				
				Netscape Communicator for Solaris	7	Current	12/12/12
				Netscape Communicator for Solaris	7.1	Current for Windows	12/12/12
Netscape for SGI (Mozilla)	1.1	OPS	COTS				
				Netscape Communicator (Mozilla) for IRIX	1.1	Current	12/12/12
				Netscape Communicator (Mozilla) for IRIX	1.4	Current for some platforms	12/12/12
NTP for SGI	4.1.0	OPS	Freeware				
				NTP	4.1.0	Current	12/12/12
				NTP	4.1.2	Current - Stable	12/12/12
				NTP	4.2.0	Current - Development	12/12/12
				NTP	4.3.0	Future	12/12/12

Table B-1. Future Software Upgrades Availability (12 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
OpenSSL	0.9.6c	OPS	Freeware				
				OpenSSL	0.9.6c	Current	12/12/12
				OpenSSL	0.9.6j	Current	12/12/12
				OpenSSL	0.9.7b	Current	12/12/12
Oracle 8i Enterprise	8.1.6	OPS	COTS				
				Oracle Server 8i	8.1.6	Current	10/31/01
				Oracle Server 8i	8.1.7.2 (release 3)	Current	12/31/06
				Oracle Server 8i	8.1.7.3	No release for SGI	12/31/06
				Oracle Server 8i	8.1.7.4	Release for Sun/SGI TBD	12/31/06
				Oracle Server 9i	9.2.0.x (v6)	Current	12/31/05
PERL Convert BinHex	1.119	OPS	Freeware				
				PERL Convert::BinHex	1.119	Current	12/12/12
PERL Crypt::Cracklib	0.01	OPS	Freeware				
				PERL Crypt::Cracklib	0.01	Current	12/12/12
PERL DBD-Sybase	0.91	OPS	Freeware				
				PERL DBD-Sybase	0.91	Current	12/12/12
				PERL DBD-Sybase	1	Current	12/12/12
PERL DBI	1.19	OPS	Freeware				
				PERL DBI	1.19	Current	12/12/12
				PERL DBI	1.37	Current	12/12/12

Table B-1. Future Software Upgrades Availability (13 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
PERL for Rimage PC	n/a	OPS	Freeware				
				PERL for Rimage QA PC (Active PERL)	5.6.1	Current	12/12/12
				PERL for Rimage QA PC (Active PERL)	5.8.0 Build806	Current	12/12/12
PERL for UNIX	5.6.1	OPS	Freeware				
				PERL for UNIX	5.6.1	Current	12/12/12
				PERL for UNIX	5.8.0	Current	12/12/12
PERL GD	1.33	OPS	Freeware				
				PERL GD	1.33	Current	12/12/12
				PERL GD	2.07	Current	12/12/12
				PERL gd	1.8.4	Current	12/12/12
PERL Hex-edit	1.2.2	OPS	Freeware				
				PERL Hex-edit	1.2.2	Current	12/12/12
PERL jpegsrc	v6b	OPS	Freeware				
				PERL jpegsrc	v6b	Current	12/12/12
PERL libpng	1.0.12	OPS	Freeware				
				PERL libpng	1.0.12	Current	12/12/12
PERL MIME-Base64	2.11	OPS	Freeware				
				PERL MIME-Base64	2.11	Current	12/12/12
				PERL MIME-Base64	2.2	Current	12/12/12
PERL PNGgraph	1.11	OPS	Freeware				
				PERL Chart-PNGgraph	1.11	Current	12/12/12
				PERL Chart-PNGgraph	1.21	Current	12/12/12

Table B-1. Future Software Upgrades Availability (14 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
PERL SendMail	2	OPS	Freeware				
				PERL SendMail	2	Current	12/12/12
PERL String::Approx	1.19	OPS	Freeware				
				PERL String-Approx	1.19	Current	12/12/12
				PERL String-Approx	1.2	Current	12/12/12
PERL TclTk	b2	OPS	Freeware				
				PERL TclTk	b2	Current	12/12/12
PERL Time::Hires	1.43	OPS	Freeware				
				PERL Time::Hires	1.43	Current	12/12/12
				PERL Time::Hires	1.48	Current	12/12/12
PERL Tk	800.024	OPS	Freeware				
				PERL Tk	800.024	Current	12/12/12
PERL zlib	1.1.3	OPS	Freeware				
				PERL Compress::zlib	1.1.3	Current	12/12/12
				PERL Compress::zlib	1.2.2	Current	12/12/12
PopChart Image Server	3.8	OPS	COTS				
				PopChart	3.8	Current	4/1/03
				PopChart	4	Current	12/12/12
				PopChart	5.1	Current	12/12/12

Table B-1. Future Software Upgrades Availability (15 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
Portus	5.05	OPS	COTS				
				Portus	5.05	Current	10/1/03
				Portus	5.1	12/31/2003	6/30/04
				Portus	5.2	6/30/2004	12/31/04
				Portus	5.3	12/31/04	6/30/05
Portus smwrap	506_1	OPS	COTS				
				Portus smwrap	506_1	Current	10/1/03
Purify	2003.06.00	OPS	COTS				
				Purify	2003.06.00	Current	6/30/03
QFS	3.5.0-64A	OPS	COTS				
				QFS	3.5.0-64A	Current	8/1/03
				QFS	4	Current	12/12/12
RDAC (Redundant Disk Array Controller)	08.30.02.00	OPS	COTS				
				RDAC (Redundant Disk Array Controller)	08.30.02.00	Current	12/12/12
Remedy ARS Client	4.5.2	OPS	COTS				
				Remedy ARS Client	4.5.1 User Tool/4.5.2 Admin Tool on NT	Current	1/1/03
				Remedy ARS Client	5.1.2	Current	12/12/12
				Remedy ARS Client	5.2	Current	12/12/12

Table B-1. Future Software Upgrades Availability (16 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
Remedy ARS Server	4.5.2	OPS	COTS				
				Remedy ARS Server	4.5.2	Current	12/31/03
				Remedy ARS Server	5.1.2	Current	12/12/12
				Remedy ARS Server	5.2	Current	12/12/12
Rimage Producer Suite	6.0.35.1	OPS	COTS				
				Rimage Producer Suite	6.0.35.1	Current	12/12/12
				Rimage Producer Suite	6.1.7.7	Current	12/12/12
SANergy for Linux PC	3.2.0.27	OPS	COTS				
				SANergy for Linux	3.2.0.27	Current	12/12/12
SANergy for SGI	3.2.1.6	OPS	COTS				
				SANergy for SGI	3.2.1.32	Current	12/12/12
				SANergy for SGI	3.2.1.6	Current	7/1/03
SANergy for Sun	3.2.1.8	OPS	COTS				
				SANergy for Sun	3.2.1.32	Current	12/12/12
				SANergy for Sun	3.2.1.8	Current	7/1/03
SANsurfer	2.4	OPS	COTS				
				SANsurfer	2.4	Current	12/12/12
SANtricity for Linux PC Science Processor	8.00.G2.01	OPS	COTS				
				SANtricity Storage Manager for Linux PC SP	8.30.G2.01	Current	12/12/12
SANtricity for UNIX	8.30.G2.01	OPS	COTS				
				SANtricity Storage Manager for UNIX	8.30.G2.01	Current	12/12/12

Table B-1. Future Software Upgrades Availability (17 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
SGI BDSpro	2.3	OPS	COTS				
				SGI BDSpro	2.3	Current	12/12/12
				SGI BDSpro	2.4	Current	12/12/12
				SGI BDSpro	2.5	No announced availability date	12/12/12
SGI C Compiler	7.3.1.3m	OPS	COTS				
				SGI C Compiler	7.3.1.3m	Current	12/12/12
				SGI C Compiler	7.4	Current	12/12/12
				SGI C Compiler	7.4.x	TBD	12/12/12
SGI C++ Compiler	7.3.1.3m	OPS	COTS				
				SGI C++ Compiler	7.3.1.3m	Current	12/12/12
				SGI C++ Compiler	7.4	Current	12/12/12
				SGI C++ Compiler	7.4.x	TBD	12/12/12
SGI Fortran 77 Compiler	7.3.1.3m	OPS	COTS				
				SGI Fortran 77 Compiler	7.3.1.3m	Current	12/12/12
				SGI Fortran 77 Compiler	7.4	Current	12/12/12
				SGI Fortran 77 Compiler	7.4.x	TBD	12/12/12
SGI Fortran 90 Compiler	7.3.1.3m	OPS	COTS				
				SGI Fortran 90 Compiler	7.3.1.3m	Current	12/12/12
				SGI Fortran 90 Compiler	7.4	Current	12/12/12
				SGI Fortran 90 Compiler	7.4.x	TBD	12/12/12

Table B-1. Future Software Upgrades Availability (18 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
SGI IRISConsole	2	OPS	COTS				
				SGI IRISConsole	2	Current	1/1/04
SGI ProDev Workshop	2.9.2	OPS	COTS				
				SGI ProDev Workshop	2.9.2	Current	12/12/12
				SGI ProDev Workshop	2.9.x	TBD	10/1/02
SGI SCSI RAID Driver	3.3	OPS	COTS				
				SGI SCSI RAID Driver	3.3	Current	12/12/12
SGI TPSSM7 RAID Software	6.0.1	OPS	COTS				
				SGI TPSSM 8.3 RAID Software	6.0.1	Current	12/12/12
Solaris	8	OPS	COTS				
				Solaris	10	06/01/2004 est.	6/1/10
				Solaris	11	06/01/2006 est.	6/1/12
				Solaris	8	Current	6/1/06
				Solaris	9	Current	6/1/08
Sony DTF-2	1.27	OPS	COTS				
				Sony DTF-2	1.27	Current	12/12/12
SQS (Spatial Query Server)	3.4.2.9	OPS	COTS				
				SQS (Spatial Query Server)	3.4.2.9	Current	1/1/05
				SQS (Spatial Query Server)	4	01/01/04	1/1/06
				SQS (Spatial Query Server)	5	01/01/05	1/1/07

Table B-1. Future Software Upgrades Availability (19 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
ssh secure shell commercial (PC)	4	OPS	COTS				
				ssh secure shell commercial PC suite	4	Current	6/1/02
				ssh secure shell commercial PC Client	5.2	Current	12/12/12
				ssh secure shell commercial PC Server	5.2 Build 31	Current	12/12/12
ssh secure shell commercial client	2.4	OPS	COTS				
				ssh secure shell commercial client	2.4.0	06/01/2002	6/1/02
				ssh secure shell commercial client	3.2.3 Build9	Current	12/12/12
ssh secure shell commercial server	1.3.7	OPS	COTS				
				ssh secure shell commercial server	1.3.7	Current	6/1/02
				ssh secure shell commercial server	3.2.3 Build 9	Current	12/12/12
Sun ONE Compilers	7	OPS	COTS				
				Sun ONE Studio 7 Enterprise Edition	7	Current	12/12/12
Sybase ASE for SGI	12.5.0.1	OPS	COTS				
				Sybase ASE for SGI	12.5.0.1 EBF10433	Current	6/1/05
				Sybase ASE for SGI	12.5.1	Beta	12/12/12
				Sybase ASE for SGI	15	03/2004	12/12/12
Sybase ASE for Sun	12.5.0.1	OPS	COTS				
				Sybase ASE for Sun	12.5.0.1 EBF10423	Current	6/1/05
				Sybase ASE for Sun	12.5.1	Beta	12/12/12
				Sybase ASE for Sun	15	3/2004	12/12/12

Table B-1. Future Software Upgrades Availability (20 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
Sybase ASE for Sun Autosys Server	12.0.0.5	OPS	COTS				
				Sybase ASE for Sun (for Autosys Server)	12.0.0.5 EBF10157	Current	12/31/03
Sybase ASE SQL Server Monitor for SGI	12.5.0.1	OPS	COTS				
				Sybase SQL Server Monitor for SGI	12.5.0.1	Current	6/1/05
				Sybase SQL Server Monitor for SGI	12.5.1	Beta	12/12/12
				Sybase SQL Server Monitor for SGI	15	03/2004	12/12/12
Sybase ASE SQL Server Monitor for Sun	12.5.0.1	OPS	COTS				
				Sybase SQL Server Monitor for Sun	12.5.0.1	Current	6/1/05
				Sybase SQL Server Monitor for Sun	12.5.1	Beta	12/12/12
				Sybase SQL Server Monitor for Sun	15	03/2004	12/12/12
Sybase ASE SQL Server Monitor for Sun Autosys Server	12.0.0.5	OPS	COTS				
				Sybase SQL Server Monitor for Sun Autosys Server	12.0.0.5	Current	6/1/04
Sybase Central	3.2	OPS	COTS				
				Sybase Central	3.2	Current	6/1/05
				Sybase Central	3.3	6/27/2003	12/12/12
				Sybase Central	3.4	03/2004	12/12/12
Sybase Open Client EBF for SGI	12.0 EBF9921	OPS	COTS				
				Sybase Open Client 12.0 EBF for SGI	12.0 EBF TBD	TBD	12/12/12
				Sybase Open Client 12.0 EBF for SGI	12.0 EBF9921	Current	12/1/04

Table B-1. Future Software Upgrades Availability (21 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
Sybase Open Client EBF for Sun	12.0 EBF9917	OPS	COTS				
				Sybase Open Client 12.0 EBF for Sun	12.0 EBF TBD	TBD	12/12/12
				Sybase Open Client 12.0 EBF for Sun	12.0 EBF9917	TBD	12/1/04
Sybase Open Client/C for SGI	12.0 EBF9921	OPS	COTS				
				Sybase Open Client/C for SGI	12.0 EBF9921	Current	12/1/04
				Sybase Open Client/C for SGI	12.5	Current	12/12/12
				Sybase Open Client/C for SGI	12.5.1	Beta	12/12/12
				Sybase Open Client/C for SGI	15	TBD	12/12/12
Sybase Open Client/C for Sun	12.0 EBF9917	OPS	COTS				
				Sybase Open Client/C for Sun	12.0 EBF9917	Current	12/1/04
				Sybase Open Client/C for Sun	12.5	Current	12/12/12
				Sybase Open Client/C for Sun	12.5.1	Beta	12/12/12
				Sybase Open Client/C for Sun	15	TBD	12/12/12
Sybase Replication Server/Manager	12.5 EBF10493	OPS	COTS				
				Sybase Replication Server/Manager	12.5 EBF10493	Current	12/12/12
Tape Support Asynchronous Personality Daemon (TSAPD)	2.3	OPS	COTS				
				TSAPD Tape Support Asynchronous Personality Daemon (TSAPD)	2.3	Current	6/1/03
				TSAPD Tape Support Asynchronous Personality Daemon (TSAPD)	2.6	Current	12/12/12

Table B-1. Future Software Upgrades Availability (22 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
TCL/Tk	8.3.3	OPS	Freeware				
				TCL/tk	8.3.3	Current	12/12/12
				TCL/tk	8.4.4	Current	12/12/12
TCPWrappers	7.6	OPS	Freeware				
				TCP Wrappers	7.6	Current	12/12/12
Tomcat	3.2.3	OPS	Freeware				
				Tomcat	3.2.3	Current	5/20/02
				Tomcat	4.1.24	Current	12/12/12
				Tomcat	4.1.x	Current	12/12/12
				Tomcat	5.0.5	Alpha	12/12/12
Top	3.5beta12	OPS	Freeware				
				Top	3.5beta12	Beta	12/12/12
Tripwire for SGI	1.3	OPS	Freeware				
				Tripwire for SGI	1.3.0	Current	8/1/02
				Tripwire (commercial)	4	Current	12/12/12
Tripwire for Solaris	1.3.1	OPS	Freeware				
				Tripwire for Solaris	1.3.1	Current	8/1/02
				Tripwire (commercial)	4	Current	12/12/12
Velocity	1.2	OPS	COTS				
				Velocity	1.2	Current	12/12/12
				Velocity	1.3.1	Current	12/12/12

Table B-1. Future Software Upgrades Availability (23 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
Veritas Volume Manager	3.0.4	OPS	COTS				
				Veritas Volume Manager	3.0.4	Current	2/12/03
				Veritas Volume Manager	3.2	Current	12/12/12
				Veritas Volume Manager	3.5	Current	12/12/12
WebGLIS	3.2.1	OPS	Freeware				
				Webglis	3.2.1	Current	6/1/03
WhatsUp Gold	8	OPS	COTS				
				WhatsUp Gold	8	03/01/2003	12/12/12
				WhatsUp Gold	8.01	07/2003	12/12/12
Windows NT for PDS	4.0SP5	OPS	COTS				
				Windows NT Workstation	4.0SP5	Current	6/30/03
				Windows NT Workstation	4SP6a	Current	6/30/03
WinZip	8.1	OPS	COTS				
				WinZip	8.1	Current	12/12/12
WU-FTPD	2.6.2	OPS	Freeware				
				WU-FTPD	2.6.2	Current	12/12/12
Xerces	2.0.1	OPS	Freeware				
				Xerces	2.0.1	Current	12/12/12
				Xerces	2.4.0	Current	12/12/12
XRP Accell	2.0.7.2.0	OPS	COTS				
				XRP Accell	2.0.7.2.0	Current	1/1/00
				XRP Accell (ELS)	6.5AC	Current	1/1/02

Table B-1. Future Software Upgrades Availability (24 of 24)

Product	Current Baseline Version	Functionality	SW Type	Future Product	Future Version	Est. Avail. Date	Est. End of Life
XRP-II	3.1.3	OPS	COTS				
				XRP-II	3.1.3 on Solaris 2.5.1	Current	1/1/02
				XRP-II	Remedy Replacement	To be developed	12/12/12